

ALCOHOL RELATED VOMITING IN A NEW ZEALAND UNIVERSITY SAMPLE:
FREQUENCY, GENDER DIFFERENCES, AND CORRELATES

A thesis submitted in partial fulfillment of
the requirements for the Degree of
Master of Science in Psychology
By
Natalie Patricia Irene Blackmore

University of Canterbury

2009

Acknowledgments

I would like to thank my parents and family for their emotional support, and my friends for theirs. A special thanks to my supervisor David Gleaves for his guidance, commitment and support. In addition, I would like to thank my co-supervisor, Greg Crucian for his contribution. Overall, I would like to thank all the individuals who participated in this study. It would not have been possible without your willingness to be involved.

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Abstract

The purpose of the study was to investigate the relationship, frequency, gender differences, situations and motivations of self-induced vomiting after drinking alcohol with disordered eating, alcohol use and psychopathology; with a nonclinical university sample of males and females in New Zealand. Participants were 102 male and 159 female university students ranging in age from 17-35 years who completed a survey designed for this study along with tests that measure eating disordered attitudes and behaviours, bulimia symptoms, depression and alcohol use. Overall, 90.04% of the sample reported that they drink alcohol and, of that subset, 57.58% of males and 42.26% of females reported having self-induced vomiting after drinking alcohol. The behaviour was related to eating pathology, depression and alcohol use with gender differences apparent. Specifically, on measures of disordered eating, females who self-induce vomiting after drinking alcohol scored higher than females who do not report the behaviour (no difference apparent for males), and overall, females scored higher than males. In terms of hazardous alcohol use, males who self-induce vomiting after drinking alcohol scored higher than males who do not with the same true for females, and overall males scored higher than females. In terms of drinking at the dependency level, individuals who reported self-induced vomiting after drinking alcohol drink at a more harmful level than those who do not (both males and females) and more males than females reported hazardous alcohol usage rates. When examining depressed symptoms, females who self-induce vomiting after drinking alcohol reported more depressed symptoms than females who do not, with males who reported the behaviour endorsing less depressed symptoms than males who do not. Overall, females indicated more depressed symptoms than males.

Persons who engaged in the behaviour were more likely to endorse it as being acceptable, with this trend being stronger for males. Females who self-induce vomiting after drinking were more likely to endorse symptoms of anorexia, bulimia and depression, whereas males who reported the behaviour were more likely to indicate harmful drinking levels, and perform the behaviour to carry on drinking. Thus, for males, self-induced vomiting after drinking alcohol was related to substance abuse whereas, for females, the behaviour may be more related to disordered eating.

Alcohol Related Vomiting in a New Zealand University Sample: Frequency, Gender Differences, and Correlates

Eating Disorders (EDs) are complex multifactorally determined major health problems in society that are separated into three subtypes: Anorexia Nervosa (AN), Bulimia Nervosa (BN) and Eating Disorder Not Otherwise Specified (EDNOS). EDs display high comorbidity with other psychiatric disorders as well as with alcohol abuse; thus there have been a large number of studies conducted in this field of research. The study of the relationship between EDs and self-induced vomiting after consuming alcohol has received limited research (Blackmore & Gleaves, 2006; Meilman, von Hippel, & Gaylor, 1991) thus warranting further investigation with the hope of furthering psychologists' knowledge about the links between ED behaviours and alcohol use.

Overview of Eating Disorders

Underlying AN and BN are a distinctive set of symptoms and core psychopathology which is similar between males and females as well as adolescents and adults. This core pathology is the over-evaluation of their weight, shape, and ability to control these. The over-evaluation of weight and shape results in a never-ending pursuit of weight loss and leads to an intense fear of gaining weight, with the combination of these factors influencing their sense of self-worth. The over-evaluation of weight and shape can lead to behaviours of checking their weight frequently or avoiding weight checking altogether as well as cognitive distortions. There are multiple risk factors for developing EDs, which will be discussed further, with many models proposed including psychosocial models. EDs interfere with psychological, physical and psychosocial functioning and can be difficult to treat.

Anorexia Nervosa. The term AN refers to refusal to maintain a minimal healthy body weight by being below 85% of what is recommended for age and height and it usually emerges by early adolescence. It is accompanied by a fear of gaining weight or becoming fat, cognitive distortions regarding weight and body shape, and amenorrhea in postmenarcheal females (American Psychiatric Association [APA], 2000). The *Diagnostic and Statistical Manual, Fourth Edition, Text Revision* (DSM-IV-TR; APA) includes two subtypes of AN: Restricting Type (no regular bingeing or purging) and Binge-Eating/Purging Type (regular bingeing or purging). Lifetime prevalence estimates for AN range from 0.3% to 0.5% of the general female population (Hoek & van Hoeken, 2003). In the New Zealand mental health survey *Te Rau Hinengaro* (2006), lifetime prevalence was 0.7% for Maori and 0.6% for all ethnicities combined (Oakley Browne, Wells, & Scott, 2006). AN occurs more frequently in females than males with a ratio of approximately 10:1 (Fairburn, Cooper, Shafran, & Wilson, 2008).

Bulimia Nervosa. BN is an eating disorder characterised by recurrent binge eating, i.e. episodes of eating unusually large amounts of food, and experiencing a loss of control during these binges. Some weight-control behaviours are engaged in to counteract the binge eating e.g. self-induced vomiting, and/or laxative or diuretic use (purging subtype), often referred to as compensatory behaviours; or severe dietary restriction and/or intense exercise (non-purging subtype) (Hay, Bacaltchuk, & Stefano, 2004). Binge eating, and compensatory behaviours both must occur, on average, at least twice a week for three months. Self-evaluation is unduly influenced by body shape and weight, and the disturbance does not occur exclusively during episodes of AN. There are two subtypes of BN: Purging and Non-purging type. Fairburn and Harrison (2003) report that BN occurs mostly in young adults, and there is an even distribution among social classes. In the New Zealand Mental Health survey, the prevalence rate for BN was

found to be 2% for females and 0.5% for males (Oakley Browne et al., 2007). Individuals with BN also may exhibit associated medical problems such as salivary gland enlargement, eroded dental enamel, electrolyte imbalance, intestinal/digestive problems and kidney problems (Striegel-Moore, Garvin, Dohm, & Rosenheck, 1999; Thompson et al.; Zaider, Johnson, & Cockell, 2000).

Binge-Eating Disorder. The term EDNOS refers to eating disorders that do not meet the diagnostic criteria for AN or BN and includes Binge-eating disorder (BED) in this classification (APA, 2000). BED refers to individuals who experience recurrent episodes of binge eating but in the absence of compensatory behaviours. Binge episodes are associated with eating more rapidly than normal; eating until feeling uncomfortably full; eating large amounts of food when not feeling physically hungry; eating alone because of being embarrassed about quantity one is eating; feeling disgusted with oneself, depressed, or very guilty after overeating. Marked distress about binge eating is present. Binge eating occurs, on average, at least two days a week, for six months. As noted, no compensatory behaviours are present (differentiates BED from BN), and BED does not exclusively occur during the course of AN or BN. In BED, most sufferers are middle-aged, and one third or more are male with the gender ratio being less than that of AN or BN (Fairburn et al., 2008).

Comorbidity of eating disorders. There are high rates of comorbidity between EDs and other psychological disorders however there is a high degree of variability between studies. A New Zealand study (Jordan, Joyce, Carter, Horn, McIntosh, & Luty et al., 2008) found that of 56 females with AN participating in a randomised controlled trial: 63% had a major depressive disorder, 30% social anxiety, 25% panic/agoraphobia, 25% simple phobia, 27% alcohol dependence, 21% obsessive-compulsive disorder (OCD), 21% cannabis use, 25% cluster A personality disorders (PDs), 12% cluster B personality disorders, and 37% cluster C personality

disorders. Jordan et al. also found that the restricting subtype of AN individuals were more likely to have OCD, and bingeing/purging subtype of AN more likely to have impulse control disorders and substance use disorders (SUDs).

In BN, there is high comorbidity with depression; frequent comorbidity with anxiety disorders, especially post-traumatic stress disorder (PTSD); varying rates reported of comorbid PDs; and substance abuse are evident (Thompson, Roehrig, & Kinder, 2007). The study by O'Brien and Vincent (2003) reported comorbidity rates between clinical BN and depression of 63% and 36% between non-clinical BN and depression. From this result the authors suggest that depression is less frequently comorbid with BN in nonclinically based populations but also suggest that there could be other reasons for this difference. The comorbidity rate between BN and OCD was found to be 32% in the study by O'Brien and Vincent. The relationship between BN behaviours of bingeing and purging and SUD with BN or AN (binging subtype) have been found to exist, with Lacey (1993) reporting heavy alcohol use (greater than 36 units of alcohol per week) in 22% of BN participants.

Course of Eating Disorders

The mean age of onset for AN is 17 years with bi-modal peaks at age 14 and 18 years. Migration between EDs is common, particularly from AN to BN (Fairburn & Harrison, 2003). In regards to long term outcomes, approximately 50% of individuals with AN make a full recovery, 20-30% show significant residual symptoms, 10-20% remain severely ill, and 5-10% die of AN related causes, including suicide (Steinhausen, 2002).

BN has a slightly later age of onset than AN – typically in late adolescence or early adulthood (Fairburn et al., 2008). Binge eating typically begins during or after an episode of

dieting. The course of BN may be chronic or intermittent, with periods of remission alternating with recurrences of binge eating. Periods of remission longer than one year are associated with better long-term outcomes (Lock & Schapman, 2006).

The course for BED tends to be phasic rather than persistent, with most clients describing sustained periods during which they are prone to binge eat, and other times when they are in control of their eating (Fairburn et al., 2008). Onset of BED is typically in late adolescence or early twenties (APA, 2000).

Risk Factors and Aetiology of Eating Disorders

There are multiple risk factors for the development of an ED with there being similar commonalities in risk factors for both AN and BN. It has been implied by researchers that there are some common transdiagnostic mechanisms involved in the persistence of both AN and BN (Fairburn, Cooper, & Shafran, 2003). Individual factors plus socio-cultural factors such as the Western thin ideal; and the body dissatisfaction associated with these are important risk factors for eating pathology (Twamley & Davis, 1999). Thus, individual and psychosocial factors play an important role in the development of an ED. Risk factors and aetiological theories will be discussed in turn below.

Eating pathology general. Risk factors for eating pathology include an elevated adiposity (body mass) which can result in increased social pressure to be thin, body dissatisfaction which can lead to dieting, negative affect, modelling experiences of body image and eating disturbance, perfectionism which may promote a relentless pursuit of the thin ideal, impulsivity, substance use, and thin-ideal internalisation (Stice, 2002). Dietary restraint is a risk factor as persons who intentionally restrict dietary intake to control body weight are likely to overeat when this restraint

is interrupted (Williamson & Martin, 1999). Early menarche is a risk factor for EDs as it is suggested that early pubertal development may foster body image and eating disturbances (Stice, 2002).

Bulimia Nervosa. Risk factors specifically for BN have been found to include perfectionism, familial history of an eating disorder, exposure to adverse events, low self esteem, early maturation, body dissatisfaction, being overweight, and substance and/or alcohol abuse (Fairburn Welch, Doll, Davies, & O'Connor, 1997; Field, Austin, Frazier, Gillman, Camargo & Colditz, 2002; Vickers, Patten, Bronars & Lane, 2004).

Aetiological theories. A number of aetiological theories have been proposed for EDs, with some being biological, cognitive-behavioural and sociocultural. Biological models, specifically genetic & twin studies, suggest that EDs are highly familial (Bulik & Tozzi, 2004). These models also emphasise the structural and functional brain abnormalities in the development of EDs. Cognitive-behavioural models emphasise the role of dysfunctional beliefs and thought processes in producing and maintaining disturbances in body image and desire for thinness, as well as restricting, bingeing and purging behaviours in maintaining an ED (Fairburn et al., 2003). Fairburn et al's. transdiagnostic approach suggests that there are four core areas of dysfunction shared with EDs. These are clinical perfectionism, core low self-esteem, mood intolerance and interpersonal difficulties.

Sociocultural models state that the social pressure to be thin fosters an internalisation of the thin ideal and body dissatisfaction, placing an individual at risk of eating pathology (Stice, 2002). These models emphasise the role of cultural expectations, particularly presented through the media on the development of body-dissatisfaction and thin ideals.

These models integrate the interaction of individual factors as well interpersonal and psychosocial factors in the acquisition and maintenance of an ED. Fairburn et al's (2003) transdiagnostic approach integrates all of the above fore mentioned factors and is useful to keep in mind for both AN and BN and in understanding the complexity of EDs.

Summary of Eating Disorders

In summary, EDs are complex psychological disorders which have numerous risk factors and are frequently comorbid with other disorders. One of the comorbid disorders that EDs are frequently co-occurring with is substance use disorders, especially alcohol use disorders. The relationship between EDs and alcohol use is of particular interest as the current study is interested in the relationship between purging (a behaviour salient to EDs) and alcohol consumption. An overview of alcohol use disorders will be discussed below.

General Overview of Alcohol Use

Alcohol Use (AU) is considered problematic when it interferes with an individual's adaptive functioning. Alcohol Abuse (AA) and Alcohol Dependence (AD) are grouped in the Substance Use Disorders (SUDs) section in the *DSM-IV-TR* (APA, 2000). AA is a maladaptive pattern of drinking alcohol manifested by recurrent and significant adverse consequences related to the repeated use of alcohol. It is not applicable if an individual has met criteria for dependency for alcohol use. AD refers to the repeated ingestion of alcohol despite significant problems (behavioural, cognitive and physiological) which are manifested by compulsive alcohol usage behaviour, and in some cases physiological dependency (tolerance and/or withdrawal). Alcohol is the most common substance abused in New Zealand Alcohol and Other Drug (AOD) Treatment Centres (Adamson, Todd, Sellman, Huriwai & Porter, 2006).

Epidemiology of alcohol use. Twelve month Alcohol Use Disorder (AUD) prevalence rates have been reported to be around 3.5%, and lifetime prevalence rates approximately 12.3%, which is the third highest prevalence rate of mental disorders in a NZ Mental Health Study (Oakley Browne et al., 2006). Current usage rates in New Zealand AOD treatment centres for AUD are 58% (Adamson et al., 2006). Males are five times more likely to have an alcohol use problem than females however, only 68% of clients seen at AOD centres in New Zealand from one study were males (Adamson et al.). During adolescence, male usage rates equal females. Regarding ethnicity, the majority of clients presenting at NZ AOD treatment centres are Caucasian (60%), then Maori (32%), Pacific (5%), and Asian (1%). Maori are over-represented in treatment centres and inadequate levels of cultural awareness have been identified as a limiting factor in the delivery of effective services to Maori (Oakley Browne et al.).

Comorbidity of alcohol use. Comorbidity between alcohol and other substances is common; for example, 45.3% of individuals with a drug use disorder also meet criteria for alcohol abuse, and 30.7% for alcohol dependency. Comorbidity with other psychiatric disorders is common also with 75% of clients with alcohol use problems seen at AOD centres reportedly having a current co-occurring non-substance disorder (lifetime rate 90%) (Adamson et al., 2006). The most common comorbid disorder is depression (34%), followed by social phobia (31%), PTSD (31%), and antisocial PD (Adamson et al.). Individuals with comorbid diagnosis are less likely to access AOD centres, have poorer compliance, and demonstrate less response to treatment (i.e. higher rates of relapse & decreased psychosocial functioning). Regarding comorbidity and gender, depression and anxiety are more common in females, and antisocial features are more common in males (Adamson et al.).

Risk Factors and Aetiology of Problematic Alcohol Use

There are numerous risk factors for problematic AU as well as many aetiological theories proposed. Genetics accounts for a large amount of risk for AUD as well as psychosocial factors. Cognitive Social Learning Theories (CSLT) utilise intra-individual factors as well as inter-individual relationships and environments to explain how problematic AU can occur. These will be discussed in turn below.

Risk factors for problematic alcohol use. One of the strongest risk factors for problematic alcohol usage is having a family history of alcohol abuse or dependence, due to both genetics and environmental factors (Sartor, Lynskey, Heath, Jacob, & True, 2006). Results from familial, twin and adoption studies suggest that genetics accounts for 40 – 60% of the variance of risk especially for early onset alcoholism in males (Kenna, & Lewis, 2008). Being a young age (between age 18 - early 20s) as well as being male in gender puts an individual at risk for an AUD. Research has also shown that multiple genes are involved in AUDs. Psychological vulnerabilities towards alcohol misuse include alcohol and drug expectancies (Bandura, 1977). These expectancies vary and can determine an individual's actual response to the drug, based on familial AU or as the individual uses over time (Johnston, O'Malley, & Bachman, 1992). Other psychological vulnerabilities include comorbidity, self medication and life stress (stress – diathesis model) (Conway, Swendsen, & Merikangas, 2003).

Social and cultural factors contributing to an AUD may include culture, specific community, subculture, and family. And as the individual gets older, peer influences play an important role. Looking at family risk factors, poor family management, family conflict, parental drinking, absence of closeness between parents and child, substance availability, modelling, and parental involvement/supervision are important risk factors for later alcohol misuse (Hawkins,

Graham, Maguin, Abbott, Hill & Catalano, 1996). Studies on peer influences have consistently reported a positive relationship between peer drinking patterns, adolescent truancy and low achievement at school to be associated with adolescent alcohol misuse (Johnston et al., 1992). It has been demonstrated however that these psychosocial risk factors are mediated by the age of initiation of alcohol use (Hawkins et al.). The younger the age of alcohol initiation the greater the later alcohol negative related consequences. A direct relationship has been shown to exist between gender and later alcohol misuse with males misusing more than their female peers (Hawkins et al.).

Aetiological theories for problematic alcohol use. There have been a number of aetiological theories proposed to account for AUD's with varying support for each. These can be grouped into disease/medical models, biochemical theories, opponent processing theory, bio-behavioural/integrationist models, behavioural, cognitive models and cognitive social learning theory (CSLT).

Disease/medical models (Cohen, 1988) place emphasis on physiological processes and view addiction as a disease and irreversible. Treatment requires complete abstinence and there is no clear evidence for disease/medical models. In considering biochemistry there are two theories proposed: 1) reward deficiency syndrome, which implicates a lack of stimulation of the pleasure pathway; and 2) inborn tolerance, which demonstrates that first-degree relatives of alcoholics compared to individuals with no family history report lower levels of intoxication (Marlatt & Witkiewitz, 2006).

The Opponent Process Theory (Soloman & Corbit, 1974) suggests that state extremes are countered with opposite or opponent reactions. Bio-Behavioural & Integrationist Models incorporate the accumulating knowledge base of addictive behaviours from both biological and psychological sciences. The Compensatory Model states that individuals are not necessarily at fault for developing the problem but are responsible for changing the behaviours. AA acquisition is

conceptualised as a maladaptive response that occurs when stressors overpower appropriate coping strategies. Physiological, conditioning, social learning & cultural factors exacerbate this process.

Behavioural models of AUD draw on classical conditioning models of behaviour. The earliest evidence of Classical conditioning in animal research comes from the work of Pavlov (1927) who demonstrated that animals could display learned responses to contextual stimuli associated previously with an unlearned response (Pavlov). Classical Conditioning emphasises that a drug-induced euphoria (Unconditioned Stimulus) over time becomes associated with environmental stimuli present during euphoric state (Conditioned Stimulus). After continued pairing with the drug-induced euphoria, these associated stimuli may produce intense urges or cravings to take the substance again (Glautier & Remington, 1995). Since Pavlov, conditioned responses produced by differing drugs have been reported in animal research (Glautier & Remington.) and human research (Carter & Tiffany, 1999).

Cognitive Models suggest that the core of addiction problems is a set of addictive beliefs derived from core beliefs and early life experiences (Marlatt & Gordon, 1985). Many alcohol users have conflicting beliefs about the advantages and disadvantages of using alcohol and, at times, this struggle between opposing beliefs is so unpleasant that they may use alcohol to relieve the tension generated by the conflict (Liese & Franz, 1996). With continued use the drug-related beliefs get activated and automatic thoughts about alcohol use are prominent. These thoughts feed into cravings which leave an individual to focus on instrumental strategies to continue use (Liese & Franz.).

CSLT's of AUD's (Bandura, 1977, 1986) draw on classical conditioning models of behaviour, expectancy effects (based on instrumental theories of behaviour), as well as cognitive models. CSLT looks at mechanisms of association between socio-environmental influences and

drinking behaviour (Read, Wood, & Capone, 2004). Bandura (1969) coined the term *reciprocal determinism* to describe the dynamic interplay among environmental variables and individual variables in determining behaviour over time. Basically it states that how we think affects how we behave and vice versa. Reciprocal determinism can be seen in high alcohol users seeking out other high alcohol users in a novel environment as well as in peer and parental modelling in shaping behaviour over time. Reciprocal determinism has important implications for understanding problematic AU behaviours because it emphasises active cognitive processes and conscious reasoning and decision making in using alcohol, quitting or relapsing, which can be applied to treatment (Niaura, 2000). Baer (2002) found social-environmental influences to be one of the strongest predictors of college drinking behaviours through both direct and indirect experiences with the social environment. Expectancy effects form the cornerstone of addictive behaviour with the outcome of the drug, drug expectancies and self efficacy expectancies determining this behaviour (Bandura, 1977). The probability of drug taking behaviour is the result of the reciprocal influence of efficacy and expectancy effects of outcome, as well as thoughts and behaviours directly linked to the situation. This learning can occur vicariously by observation of parents or peers and directly from ones own experience (Niaura.).

Alcohol Abuse and Eating Disorders

Alcohol abuse has been found to be comorbid with BN in clinical samples, with 18-50% of individuals with BN reporting lifetime comorbidity with alcohol abuse (Bulik, Sullivan, McKee, Wletzin & Kaye, 1994; McCormack & Carman, 1989). Bulik et al. found specifically that 41% of the clinical sample with BN reported alcohol abuse. A limitation of the study by Bulik et al. is the possibility of a ceiling affect being present in the results because the sample chosen was a selection

of clinical females with BN who were in the severe range of the spectrum. Rates of comorbid substance abuse and BN have been found to be significantly higher in clinical samples compared to community samples which could be related to the severity of the eating disorder (Bulik et al.). Zaider et al. (2000) found that 9.4 % of their adolescent participants with an ED reported comorbid substance abuse. Ross and Iving's (1999) study support Zaider et al's. finding, reporting specifically that adolescents with BN reported higher alcohol usage than non-disordered eating participants as well as more alcohol related problems. However, there have been inconsistencies between studies. For example, Dunn, Larimer, and Neighbors (2002) did not find that BN participants reported greater alcohol use than non BN participants. Ross and Iving's study and others have shown that alcohol abuse is higher in females with BN compared to other eating disorders or depression. Ross and Iving's study and others like it (Dansky, Brewerton, & Kilpatrick, 1998; Dunn et al., 2002) are more closely related to the current study as these studies were conducted with non-clinical samples.

The inconsistent findings regarding the relationship between alcohol abuse and BN could be due to methodological inconsistencies between studies. A note to mention here is that participants in Ross and Iving's (1999) study were college students who have generally a higher consumption of substance use than the average person out of the college environment which could have distorted the results and accounted for these differences in consumption rates (Ross & Iving.). These methodological limitations need to be kept in mind for the current study as the participants were University students. Alcohol abuse is of particular interest in the current study as it is focused on eating disordered behaviours that occur specifically in the context of alcohol use.

Self-Induced Vomiting with Alcohol Use

Social bulimia is a term that was coined in the popular literature to refer to an unhealthy behaviour pattern of intentionally vomiting in the context of drinking alcohol. An example of social bulimia would be intentionally vomiting after or whilst currently drinking alcohol. A small number of studies have shown this behaviour of self-induced vomiting in the context of alcohol to occur between 19.7% and 59.8% of University females (Blackmore & Gleaves, 2006; Meilman et al., 1991). Social bulimia has been viewed as bulimia's equivalent to social smoking (Cosmopolitan Magazine, February 2004). Amanda Jordan, founder and chairperson of the Eating Disorders Foundation Incorporation claimed it to be an 'at-risk' behaviour for an ED but that it is not quite an ED. Jordan stated that around fifty per cent of young females have thought about experimenting with bulimia in this way without actually realizing the health risks (cited by Cosmopolitan Magazine, February 2004). This estimate from Jordan was based on anecdotal evidence and not on empirical research which is a concern in and of itself, thus warranting empirical research to be conducted on this problem. This behaviour pattern could be a warning sign for other eating problems or may be a health risk in and of itself. It is important to note that the term social bulimia is a misnomer because it is only describing this unhealthy behaviour in the context of drinking alcohol whereas the term bulimia actually refers to uncontrolled eating (and the term BN refers to bingeing followed by compensatory behaviours - see previous section on epidemiology of eating disorders). Social bulimia is referring to the compensatory behaviour of self-induced vomiting after or whilst still consuming alcohol, not necessarily after bingeing or consuming food.

In what appears to be the first study published on this topic, Meilman et al. (1991) reported that 19.7% of females in their sample reported self-induced vomiting after drinking alcohol and consuming food. Specifically, the authors found that 7.4% of those that performed the purging

behaviour did so only after drinking alcohol, and an additional 7.4% purged after drinking alcohol and eating. The authors also found that 60.7% of those in their sample that purged after eating also purged after drinking alcohol, and 50% of those who purged after drinking alcohol also purged after eating.

In a more recent study, Blackmore and Gleaves (2006) found that approximately 90.6% of their female sample reported drinking alcohol and of those, 59.8% reported that they had intentionally vomited after drinking alcohol. The frequency of this behaviour was positively correlated with a measure of BN symptomatology ($r = .25$). The majority (59.3%) of females reported that in the last month, they had currently self-induced vomiting after drinking alcohol between one and six times, with 2.8% of females who reported self-induced vomiting after drinking alcohol performing the behaviour on average, 1.5 times a week. A large number of participants reported knowing other females who intentionally vomited after consuming alcohol (80.4%), and a smaller amount knew of males (38.3%). Limitations of the Blackmore and Gleaves study were that they only sampled female participants, did not measure participants' motivations for self-inducing vomiting after drinking alcohol, did not use a standardised measure of alcohol usage, and had a limited sample age range. With this in mind, the current study aimed to investigate male and female behaviours and motivations of self-induced vomiting after drinking alcohol, as the Blackmore and Gleaves' study indicated that males also engaged in this type of behaviour but did not directly study them.

In the Blackmore and Gleaves (2006) study there was some discrepancy between the participants reporting engaging in self-induced vomiting after drinking alcohol and agreeing that it was ok, as 59.8% performed the behaviour, but only 48.6% agreed or strongly agreed that it was ok to do so. The discrepancy between females who reported engaging in self-induced vomiting after

consuming alcohol and reportedly indicated that it was socially acceptable to do this behaviour possibly demonstrates what is often seen with BN where individuals use purging techniques, yet they acknowledge that it is not socially acceptable (Fairburn et al., 1997; Fisher, Golden, Katzman, Krepie, Rees, Schebendach et al., 1995). As to what motivates individuals to engage in self-induced vomiting after drinking alcohol, this was assessed in the current study as it is thought this information may be useful in identifying if it is a risk factor for other eating disorders, especially BN due to the similarities in purging behaviour. The current study focused on purging and bingeing in relation to individuals consuming alcohol. Specifically, it investigated the frequency of self-induced vomiting after consuming alcohol (within a few hours of consumption) or whilst continuing to drink alcohol; and individuals attitudes towards this behaviour as well as the motivations behind engaging in self-induced vomiting after drinking alcohol for those individuals who report performing this behaviour.

As previously stated, the emergence of BN is typically from late adolescence to early adulthood, and in New Zealand the age that an individual can legally consume alcohol is eighteen years of age (Alcoholic Liquor Advisory Council Act, 1976; Mitchell, 1990). Therefore the alcohol and BN comorbidity relationship is of particular interest to further investigate the factors surrounding alcohol and BN or bulimic like behaviours within a New Zealand sample. Striegel-Moore, Silberstein and Rodin (1986), found that binge drinking (classified in their study as 5 or more alcoholic drinks in one sitting) is a high risk behaviour correlated with BN and other substance abuse disorders. The causative relationship however in this study was unclear; that is, the researchers could not conclude whether females had weight concerns because they engaged in binge drinking and subsequently put on weight or whether they engaged in binge drinking because of body dissatisfaction and it helped increase body confidence.

Aims of Current Study

The previous research on the relationship between substance abuse and BN has mostly examined the types of substances abused in eating disordered populations but to the best of our knowledge only two previous studies have examined the relationship between self-induced vomiting specifically after drinking alcohol (Blackmore & Gleaves, 2006; Meilman et al., 1991). Therefore the aim of the proposed research is to investigate further the relationship between the consumption of alcohol, purging and eating within this context or shortly afterwards. Specifically, the goals were to: (a) assess how often people engage in this behaviour; (b) assess people's attitudes towards self-induced vomiting after drinking alcohol; (c) assess people's motivations for engaging in this behaviour; (d) determine if there is a gender difference in the frequency that this behaviour occurs, attitudes and thoughts towards it. Though not directly assessed in the pilot study, this would be consistent with Blackmore and Gleaves findings; (e) investigate how self-induced vomiting after drinking alcohol is related to other eating problems. It is hypothesised that self-induced vomiting after drinking alcohol would be more strongly associated with bulimic behaviour than anorexic behaviour and attitudes, with this hypothesis being consistent with findings from Blackmore and Gleaves' (2006) study; (f) Investigate how self-induced vomiting after drinking alcohol is related to depression; and (g) assess how self-induced vomiting after drinking alcohol is related to alcohol abuse and consumption.

Method

Participants

Participants were 102 male and 159 female university students (total sample = 261 participants) aged from 17-35 years ($M = 22.87$, $SD = 16.41$) from a university in New Zealand. The BMI values ranged from 16.72 (0.4%) to 40 (0.4%) with a mean of 23.57 ($SD = 4.04$). Male BMI values ranged from 17.53 to 38.64 with a mean of 24.47 ($SD = 3.75$); and female BMI values ranged from 16.72 to 40 with a mean of 22.99 ($SD = 4.12$). The majority (65.13%) of males and females were in the normal range for BMI values (18.50 to 24.90).

Measures

Bulimia Test-Revised (BULIT-R; Thelen, Farmer, Wonderlich, & Smith, 1991). The Bulimia Test (BULIT: Smith & Thelen, 1984) and the Bulimia Test-Revised (BULIT-R) are self-report instruments that were developed to measure BN and BN like symptoms as defined in the DSM-III (APA, 1980) and DSM-III-R (APA, 1987) respectively. The BULIT was developed in 1984 by testing clinical patients with BN and then administering it to college populations. It originally had 75 items and through analyses was cut down to 32 items (Smith & Thelen). The BULIT was revised by Thelen et al. in 1991 and reduced to 28 items based on the DSM-III-R classification of BN. The items are in a forced choice five point scale. Possible scores on the BULIT-R range from 28 to 140 with a cut-off score of 104 or greater for a score indicating a high likelihood of BN.

The BULIT-R has demonstrated reliability with both clinical and non-clinical female populations with a high test-retest reliability being found over a two month interval for the latter group of $r = .95$ (Thelen et al., 1991). The BULIT-R has high criterion-related validity when used

to screen for bulimia like symptoms with the DSM-IV classification of BN (Thelen, Mintz, & Vander-Wal, 1996). Studies have found the BULIT-R to demonstrate good internal reliability with Cronbach's alphas ranging from .92 to .98 (Brelsford, Hummel, & Barrios, 1992; Thelen, et al., 1991; Thelen et al., 1996). Each of the 28 items in the BULIT-R has good predictive ability with point-biserial correlations ranging from .44 to .74 (mean $r = .60$) (Thelen et al., 1996). Thus the BULIT-R is a respectable measure to use in the study as the studies mentioned have demonstrated good reliability and validity. It is appropriate to use with a DSM-IV characterization of BN (Thelen, et al., 1996) with further studies needed with the revised version of the DSM-IV-TR. The BULIT-R demonstrated acceptable internal reliability in the current study with a Cronbach's alpha of .93.

The Eating Attitudes Test (EAT-26; Garner, Olmsted, Bohr, & Garfinkel, 1982). The EAT-26 was developed after a factor analysis of the original EAT-40 was undertaken and revealed three factors: (1) Dieting, (2) Bulimia and food preoccupation and (3) Oral control. The original EAT-40 (Garner & Garfinkel, 1980) and the EAT-26 are used for predicting and assessing general eating pathology and anorexic behaviour. A cut-off score of 40 was used in the original EAT-40 and one of 20 on the EAT-26, which correctly classifies anorexic and female comparison non-anorexic individuals. The intercorrelations between the variables on the two versions of the scale suggest that the EAT-26 is highly predictive of the EAT-40 ($r = .98$). Garner et al., (1982) demonstrated that Factor I has high internal reliability (Cronbach's alpha = .90) and is highly positively correlated with the total EAT-26 scale ($r = .93$). Garner et al., (1982) also found that Factor II has high internal reliability (Cronbach's alpha = .84) and is weakly positively correlated with the total EAT-26 scale ($r = .64$), and factor III has high internal reliability (Cronbach's alpha = .83) and is weakly positively correlated with the total EAT-26 scale ($r = .60$). The overall internal reliability

of the EAT-26 scale has been demonstrated to be high; shown in one study with an alpha = .90 (Kutlesic, Williamson, Gleaves, Barbin, & Murphy-Eberenz, 1998). The EAT-26 has been validated with AN patients, as well as in identifying eating disturbances in non-clinical samples showing moderate to high correlations with other scales. For example, intercorrelations between the EAT-26 and Interview for Diagnosis of Eating Disorders (IDED-IV) subscales were between $r = .60$ and $.71$, for the dieting factor of the EAT-26 (Kutlesic, et al.). Thus, the EAT-26 is a sound measure to use for the study to assess eating disturbance such as cognitive distortions and attitudes around eating and dieting. The EAT-26 demonstrated acceptable internal reliability in the current study with a Cronbach's alpha of .90.

The Michigan Alcohol Screening Test (MAST; Selzer, 1971). The MAST is a measure of alcohol use and is a widely used self-report screening tool. It consists of 25 items on a "yes/no" format designed to provide rapid and effective screening for long-term alcohol-related problems. Scores range from 0 to 53 with a score of less than three indicating no alcohol problem, a score of 3-4 suggestive of an alcohol problem and a score of 5 or more indicating alcoholism. Internal and test-retest reliability have been found to be satisfactory (Hedlund & Vieweg, 1984) with reliability demonstrated to be lower for shorter versions indicating that the longer versions should be used when applicable (Gibbs, 1983). The MAST is significantly related to a number of other measures of alcoholism, with correlations ranging from $r = .83$ to $.93$. The MAST identifies many individuals with alcohol related problems yet it also has a high rate of false positives and thus a tendency to over-diagnose. The MAST is designed to be used at a dependency level as it is less useful in discriminating hazardous or harmful drinking which is when a tool such as the AUDIT should be used (Saunders et al., 1993). The MAST demonstrated acceptable internal reliability in the current study with a Cronbach's alpha of .72

The Alcohol Use Disorders Identification Test (AUDIT; Babor, Higgins-Biddle, Saunders, & Monteiro, 2001). The AUDIT is a brief measure of alcohol use frequency, dependence and negative social consequences over the last year. It is used with the purpose of screening for hazardous and harmful alcohol intake in primary and other health care settings. It is a 10 item screening questionnaire helpful for identifying excessive drinking as the cause of or relevant to the presenting illness. It was developed by the World Health Organisation (WHO) as a simple, time limited screen (Babor et al., 2001). A score of 8 or higher is suggestive of a harmful drinking pattern. The AUDIT demonstrates high internal consistency suggesting that the AUDIT is measuring one construct, with estimates demonstrating values over .80 (Babor et al.). The AUDIT demonstrates satisfactory test-retest reliability of $r = .86$ (Babor et al.). Significant correlations have been found between the AUDIT and MAST in one study of $r = .73$ to $r = .76$ (Skipsey, Burleson, & Kransler, 1997). The AUDIT demonstrates good construct validity and discriminate validity for both males and females though evidence for females is limited compared to what is available for males (Babor et al, 2001). The total score on the AUDIT appears to reflect the extent of alcohol involvement along a broad continuum of severity (Babor et al, 2001). The AUDIT demonstrated acceptable internal reliability in the current study with a Cronbach's alpha of .82.

Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977). The CES-D was developed by researchers at the Center for Epidemiological Studies at the United States National Institute of Mental Health to measure depressive symptoms among adults in community surveys (Radloff, 1977). Items were selected from previously validated depression scales to represent the major components of depressive symptomatology identified from these earlier studies. The CES-D is a 20 item, 4 point self-report rating scale that measures symptoms of depression that the individual may have felt in the last week, with ratings from "rarely or none of

the time (less than 1 day)” to “most or all of the time (5-7 days)”. The range of scores is from 0 to 60, with the higher scores indicating the presence of more depressive symptomatology. The original study (Radloff, 1977) reported an internal reliability Cronbach’s alpha = .85 for the general population, and .90 for a patient sample. The test-retest reliability was satisfactory, showing that over 2 to 8 weeks it ranged from .51 to .67, and from .32 to .54 over 3 to 12 months. Convergent validity was supported by significant correlations with other scales designed to measure depression; for example the correlation between the CES-D and Beck Depression Inventory was $r = .70$ (Roberts, Lewinsohn, & Seeley, 1991), and other correlations ranged from .54 to .65 with other measures of depression for non-clinical samples (Hann, Winter, & Jacobsen, 1999). The CES-D demonstrated acceptable internal reliability in the current study with a Cronbach’s alpha of .90

Drinking Habits Questionnaire. The Drinking Habits Questionnaire was developed for the current study to assess behaviours, frequencies, attitudes and motivations that are involved with intentionally vomiting after engaging in drinking alcohol. The Drinking Habits Questionnaire was adapted from the Social Bulimia Survey (2006) developed by Blackmore and Gleaves (2006). Because the Drinking Habits Questionnaire assessed attitudes as well as behaviours, individuals were able to fill it out even if they did not drink alcohol, or had never intentionally made themselves vomit after consuming alcohol. The Drinking Habits Questionnaire comprises 21 questions with the majority being on a five point scale ranging from “strongly agree” to “strongly disagree” or “frequently” to “never”. There are also categorical questions requiring “yes” or “no” type answers, frequency questions, specified options (including an “other” option) and some questions asking for the participant’s weight, age, ethnicity and height. Some examples of the questions in the Drinking Habits Questionnaire are: “Have you ever made yourself intentionally

vomit whilst drinking alcohol or immediately after drinking alcohol (for example: within a couple of hours)?” and “What are your reasons for intentionally vomiting after drinking alcohol? (please circle the response that applies to you)”.

Procedure

There were two different recruitment procedures. The first method was through a participant pool in the psychology department at a university in New Zealand with the second method entailing emailing potential participants at the same university about the study. Emails from the second recruitment method were not sent to first year Psychology students to ensure participants were not recruited twice, as well as the researcher verbally asking every participant if he or she had participated in the study previously. Once participants had completed the six questionnaires, the participant pool individuals received course credit and the email individuals were given a \$1.00 scratchy ticket as enumeration for participating in the study. All participants, regardless of recruitment method were tested in groups or individual settings in the primary researcher's office. Upon arrival, participants received an information sheet outlining the study. Participants were informed that participation was voluntary and that they could withdraw at any stage. Once they agreed to participate, each participant was handed a packet of six questionnaires containing the EAT-26, MAST, Drinking Habits Questionnaire, BULIT-R, CES-D and the AUDIT. Participants took approximately 20-40 minutes to fill out the six questionnaires and, once they had completed them, participants were given a debriefing sheet. The data were then analyzed with SPSS version 13.0.

Results

All statistical analyses in the study had an alpha level of .05 unless otherwise stated.

Sample Characteristics

Refer to table 1 for the actual values of the sample characteristics. The total average EAT-26 score for participants was $M = 5.80$, $SD = 7.48$; and the total average BULIT-R score for the participants being $M = 47.84$, $SD = 16.07$. The total CES-D score for participants was $M = 12.28$, $SD = 9.14$; and the total MAST score for participants was $M = 2.63$, $SD = 2.34$. Finally, the total AUDIT score for participants was $M = 10.26$, $SD = 6.21$.

Therefore on the EAT-26 and BULIT-R, both males and females were in the normal range for eating and dieting with a cut-off score for eating pathology of twenty on the EAT-26 and a cut-off score for BN on the BULIT-R being 104 (Garner et al., 1982; Thelen et al., 1991). In looking at the MAST, the majority of females indicated no alcohol problems with 27.10% scoring in the harmful drinking range; however the majority of male's were indicative of alcohol problems with 60.82% scoring a three or higher suggesting harmful levels of alcohol usage (Selzer, 1971). On the AUDIT, a score of eight or higher indicates harmful drinking patterns with 80.00% of males and 52.90% of females falling into this group. Higher scores on the CES-D suggest greater depressive pathology with females indicating more depressive symptoms.

Frequency of Drinking Behaviours

In the sample, 90.04% (235/261) of the participants reported currently drinking alcohol, with 14.84 being the average age to start (range = 10-20 years). The average age to start drinking

alcohol for males was 14.16 years ($SD = 2.15$) and for females was $M = 15.30$ years, $SD = 1.74$.

This gender difference was statistically significant, $t(247) = 4.59, p < .001$.

The mean number of alcohol-containing drinks consumed in one week for participants who reported drinking alcohol was 6.77 ($SD = 7.01$). The average number of reported drinks consumed in a week was 10.12 ($SD = 9.05$) for males and $M = 4.51, SD = 3.84$ for females with the difference being statistically significant, $t(247) = 6.70, p < .001$. Of those who reported drinking alcohol, 10.10% reported not consuming any alcohol in a typical week. The range of standard drinks consumed in an average week was from zero through to sixty. Based on participants' self-report the average number of standard drinks of alcohol consumed in one sitting was 5.02 ($SD = 3.68$).

In terms of the amount typically consumed in a sitting, this ranged from zero (reported by 2.00% of the sample) to thirty standard drinks (reported by one participant). The average number of standard drinks that males reported consuming in one sitting was 6.38 ($SD = 4.51$) and females $M = 4.12, SD = 2.63$. The difference between males and females was statistically significant, $t(246) = 5.00, p = .01$.

Frequency of Reported Self-Induced Vomiting after Drinking Alcohol

Of those who reported that they did drink alcohol (90.04% of the total), 48.58% reported self-induced vomiting after drinking alcohol. Looking at gender, 57.58% of male drinkers reported self-inducing vomiting after drinking alcohol, and 42.26% of female drinkers reported performing this behaviour, with this difference being statistically significant, $\chi^2 [1, N = 247] = 5.35, p = .02$.

Frequency of reported self-induced vomiting after drinking alcohol (previous twelve months). The frequency of participants' reporting self-induced vomiting over the previous twelve months ranged from zero (15.57%) to twenty (0.82%) with a mean of 3.16 ($SD = 3.02$). There was

no statistically significant difference in the frequency of self-induced vomiting over the previous twelve months between males and females, $t(121) = .42, p = .68$. Participants who endorsed self-induced vomiting after consuming alcohol, reported that in the previous twelve months, 15.6% had not self-induced vomiting after consuming alcohol, with the majority (84.4%) reporting they had performed this behaviour between one and twenty times.

Frequency of reported self-induced vomiting after drinking alcohol (previous six months).

The frequency of participants' reporting self-induced vomiting over the previous six months ranged from zero (25.62%) to twelve times (0.82%) with a mean of 1.90 ($SD = 2.15$). There was no statistically significant difference in the frequency of self-induced vomiting over the previous six months between males and females, $t(120) = 1.16, p = .71$. Of participants' who endorsed self-induced vomiting after consuming alcohol, the majority (74.38%) reported that in the previous six months they had self-induced vomiting after drinking alcohol between one and twelve times with 25.62% reporting not having engaged in this behaviour.

Frequency of reported self-induced vomiting after drinking alcohol (previous three months). The frequency of participants' reporting self-induced vomiting over the previous three months ranged from zero (47.12%) to ten times (0.82%) with a mean of 1.15 ($SD = 1.77$). There was no statistically significant difference in the frequency of self-induced vomiting over the previous three months between males and females, $t(120) = .36, p = .72$. Of participants' who endorsed self-induced vomiting after consuming alcohol, 52.88% reported that in the previous three months they had self-induced vomiting after drinking alcohol between one and ten times and 47.12% had not performed this behaviour.

Frequency of reported self-induced vomiting after drinking alcohol (previous month). The frequency of participants' reporting self-induced vomiting over the previous month ranged from

zero (77.69 %) to five times (0.82%) with a mean of 0.33 ($SD = 0.75$). There was no statistically significant difference in the frequency of self-induced vomiting over the previous month between males and females, $t(120) = .20, p = .84$. Of participants' who endorsed self-induced vomiting after consuming alcohol, 22.31% reported that over the previous month they had self-induced vomiting after drinking alcohol between one and five times with 77.69% of participants' reporting that they had not self-induced vomiting after consuming alcohol.

Frequency of reported self-induced vomiting after drinking alcohol (previous week). The frequency of participants' reporting self-induced vomiting over the previous week ranged from zero (91.7%) to five times (0.8%) with a mean of 0.15 ($SD = 0.63$). There was no statistically significant difference in the frequency of self-induced vomiting over the previous week between males and females, $t(120) = .15, p = .88$. Of participants' who endorsed self-induced vomiting after consuming alcohol, 8.3% reported that in the previous week they had self-induced vomiting after drinking alcohol between one and five times with 91.7% of participants' reporting that they had not self-induced vomiting after consuming alcohol in the previous week.

Differences between Participants who Self-Induce Vomiting after Drinking Alcohol and Those Participants who Do Not

To test whether differences exist (in terms of symptoms of disordered eating, alcohol use and depression) between individuals who self-induce vomiting after drinking alcohol and those who do not, and to see if any such differences were also related to gender, two-way ANOVAs were conducted. The independent variables were self-induced vomiting and gender; with the EAT-26, MAST, BULIT-R, CES-D, and AUDIT as the dependent variables. These will be discussed below.

EAT-26. On the EAT-26, there was a main effect for gender, $F(1,235) = 25.65, p < .001$, a main effect for self-induced vomiting after drinking alcohol, $F(1, 235) = 10.87, p < .001$, and a two-way interaction, $F(1,235) = 4.19, p = .018$. The interaction was investigated by plotting means and also by performing tests of simple effects. As can be seen in Figure 1 the interaction appeared to be due to the fact that the vomiting effect for women, $F(1,142) = 13.12, p < .001$ (eta squared value = .09) was larger than the effect for men, $F(1,92) = 1.58, p = .22$ (eta squared value = .02), which was not even statistically significant. The other way to interpret the interaction would be to say that the gender effect was larger for those that self-induced vomiting, $F(1,114) = 18.92, p < .001$ (eta squared value = .14), than for those that did not, $F(1,120) = 6.85, p = .01$ (eta squared value = .05).

MAST. For the MAST, there was a main effect for gender, $F(1,237) = 18.16, p < .001$ (eta squared value = .07), a main effect for self-induced vomiting status, $F(1,237) = 31.52, p < .001$ (eta squared value = .12), but not a statistically significant two-way interaction, $F(1,237) = .244, p = .62$. The main effect for gender was due to males scoring significantly higher than females. The main effect for self-induced vomiting status was due to individuals who report this behaviour scoring significantly higher on the MAST than those that do not report vomiting.

BULIT-R. For the BULIT-R, there was a main effect for gender, $F(1,242) = 29.30, p < .001$ (eta squared value = .11), a main effect for self-induced vomiting status, $F(1,242) = 7.95, p = .005$ (eta squared value = .03), but not a statistically significant two-way interaction, $F(1,242) = 1.12, p = .29$. The main effect for gender was due to females scoring significantly higher than males. The main effect for self-induced vomiting status was due to individuals who report this behaviour scoring significantly higher on the BULIT-R than those that do not report the behaviour.

CES-D. On the CES-D, there was a main effect for gender, $F(1,241) = 21.34, p < .001$, no main effect for self-induced vomiting after drinking alcohol, $F(1,242) = .22, p = .64$, and a two-

way interaction, $F(1,241) = 5.28, p = .02$. The interaction was investigated by plotting means and also by performing tests of simple effects. As can be seen in Figure 2 the interaction appeared to be due to the fact that the vomiting effect for women, $F(1,142) = 4.31, p = .04$ (eta squared value = .03), was larger than the effect for men, $F(1,98) = 1.61, p = .21$ (eta squared value = .02), which was not even statistically significant. The other way to interpret the interaction would be to say that the gender effect was larger for those that self-induced vomiting, $F(1,116) = 24.35, p < .001$ (eta squared value = .18), than for those that did not, $F(1,124) = 2.67, p = .12$ (eta squared value = .02).

AUDIT. For the AUDIT, there was a main effect for gender, $F(1,242) = 30.18, p < .001$, a main effect for self-induced vomiting status, $F(1,242) = 61.37, p < .001$, and a two-way interaction, $F(1,242) = 4.55, p = .03$. The interaction was investigated by plotting means and also performing test of simple effects. As can be seen in Figure 3 the interactions appeared to be due to the fact that the vomiting effect for men, $F(1,96) = .38.95, p < .001$ (eta squared value = .29), was larger than the effect for women, $F(1,145) = 21.29, p < .001$ (eta squared value = .13). The other way to interpret the interaction would be to say that the gender effect was larger for those that self-induced vomiting, $F(1,119) = 28.45, p < .001$ (eta squared value = .28), than for those that did not, $F(1,122) = 5.81, p = .02$ (eta squared value = .05).

Attitudes towards Self-Induced Vomiting After Consuming Alcohol

To test whether attitude differences exist between individuals who self-induce vomiting after drinking alcohol and those who do not, two-way ANOVAs were conducted, with vomiting status and gender as the independent variables and an attitudinal statement as the dependent variable. These will be presented in turn.

Attitudes towards the statement “it is ok if people intentionally vomit after consuming alcohol”. On the above statement, there was a main effect for gender, $F(1,244) = 10.94, p < .001$, a main effect for self-induced vomiting after drinking alcohol, $F(1,244) = 80.76, p < .001$, and a two-way interaction, $F(1,244) = 5.92, p < .001$. The interaction was investigated by plotting means and also by performing tests of simple effects. As can be seen in Figure 4 the interaction appeared to be due to the fact that the vomiting effect for men, $F(1,97) = 56.23, p < .001$ (eta squared value = .37), was larger than the effect for women, $F(1,146) = 26.31, p < .001$ (eta squared value = .15). The other way to interpret the interaction would be to say that the gender effect was larger for those that self-induced vomiting, $F(1,119) = 15.05, p < .001$ (eta squared value = .14), than for those that did not, $F(1,124) = .34, p = .56$ (eta squared value = .003), which was not even statistically significant.

Attitudes towards the statement “it is not ok if someone engages in self-induced vomiting after consuming alcohol”. On the above statement, there was a main effect for gender, $F(1,244) = 4.30, p = .039$, a main effect for self-induced vomiting after drinking alcohol, $F(1,244) = 27.32, p < .001$, and a two-way interaction, $F(1,244) = 8.35, p = .004$. The interaction was investigated by plotting means and also by performing tests of simple effects. As can be seen in Figure 5 the interaction appeared to be due to the fact that the vomiting effect for men, $F(1,98) = 33.13, p < .001$ (eta squared value = .26), was larger than the effect for women, $F(1,147) = 3.06, p = .08$ (eta squared value = .002), which was not even statistically significant. The other way to interpret the interaction would be to say that the gender effect was larger for those that self-induced vomiting, $F(1,119) = 15.98, p < .001$ (eta squared value = .12), than for those that did not, $F(1,126) = .27, p = .60$ (eta squared value = .002), which was not even statistically significant.

Attitudes regarding the statement “people who engage in self-induced vomiting after drinking alcohol need professional help”. On the above statement, there was a main effect for gender, $F(1,246) = 7.63, p = .006$ (eta squared value = .03), a main effect for self-induced vomiting status, $F(1,246) = 54.40, p < .001$ (eta squared value = .18), but not a statistically significant two-way interaction, $F(1,246) = .10, p = .75$. The main effect for gender was due to males scoring significantly higher than females. The main effect for self-induced vomiting status was due to individuals who report this behaviour scoring significantly higher on the statement than those that do not report the behaviour.

Participants’ Motivations for Engaging in Self-Induced Vomiting After Drinking Alcohol

To investigate motivations for self-induced vomiting after drinking alcohol, chi-square tests were conducted and standardized residuals and cells were examined. Table 2 demonstrates participants’ motivations regarding intentionally vomiting after consuming alcohol and found a statistically significant effect for gender, $\chi^2 [5, N = 121] = 25.39, p < .001$). Examining the cells and residuals revealed the effect was due to more males than females reporting self-induced vomiting after drinking alcohol in order to carry on drinking; and more females than males reporting the behaviour to avoid a hangover.

Situations where Participants Self-induce Vomiting After Consuming Alcohol

Examining situations in which participants reported they would self-induce vomiting after drinking alcohol found that the majority of participants reported performing this behaviour when they “feel sick from the amount of alcohol they’ve already consumed” (55.8%). It was also found that 18.3% of participants reported engaging in this behaviour only when they had “consumed too much alcohol”, 14.2% “when they are out socialising”, 6.7% reported “other reasons”, 4.2% “when

they are alone” and 0.8% “every time they drink alcohol”. Table 3 presents gender differences on situations where individuals reported self-induced vomiting after drinking alcohol and chi-square analyses were conducted and found that there is a statistically significant effect for gender and situations participants self-induce vomiting after drinking alcohol, $\chi^2 [4, N = 99] = 14.04, p = .02$. Examining the residuals and cells revealed that more males than females self-induce vomiting after drinking alcohol in situations when they have consumed too much alcohol, and more females than males performed the behaviour alone; however this analysis needs to be interpreted with caution due to the cell sizes being small in some of the cells.

Discussion

The purpose of the study was to investigate the relationship, frequency and gender differences of self-induced vomiting after drinking alcohol, with disordered eating, alcohol use and psychopathology; in a nonclinical University sample of males and females in New Zealand. It specifically aimed to assess (a) how often people engage in this behaviour, (b) people’s attitudes and motivations towards self-induced vomiting after consuming alcohol, (c) gender differences in regards to the self-induced vomiting after drinking alcohol behaviour, as well as its relation to clinical variables of eating, alcohol use and depression, and differences in motivations, attitudes, and situations that this behaviour occurs, (d) how self-induced vomiting after drinking alcohol is related to other eating problems, depression, alcohol abuse and consumption.

Alcohol Use

In the university sample tested, 90.04% of the participants reported drinking alcohol, and of those, 48.58% reported they had intentionally vomited after drinking alcohol. The average age that males reported starting to drink alcohol was 14.16 years which was significantly younger than

females, who on average started at 15.30 years. Males scored significantly higher than females on both the MAST and AUDIT demonstrating an overall higher alcohol consumption which is consistent with males reporting consuming significantly larger quantities of alcohol than females in an average week with the mean being just over double that which females consume (10.12 cf. 4.51). This finding is consistent with literature finding that males drink more alcohol than females (Adamson et al., 2006).

The current study found that the majority of both male and female alcohol consumption rates are in the hazardous and harmful range with one male participant reporting drinking sixty standard alcoholic drinks in a typical week. The majority of females (27.10%) who reported drinking alcohol did not demonstrate alcohol dependency problems with scores being below what is required on the MAST for a level of dependency (cut off scores for alcohol problems greater than or equal to three; Selzer, 1971). The majority of males (60.82%) scored a three or above, which is suggestive of alcohol problems and dependency. Of females who reported consuming alcohol, just over half of this group (52.9%) demonstrated harmful drinking patterns as shown on the AUDIT, and of males who reported drinking alcohol, the majority (80.00%) demonstrated harmful drinking patterns, with male levels being significantly higher than females (cut off score of being equal to or greater than eight; Babor, et al., 2001). A possible explanation for more participants' scoring in the clinical range for the AUDIT rather than the MAST may be that the MAST is intended to measure alcohol use over a lifetime so this will increase with age, and the average age of the sample was 21.90 years. The reported level of alcohol use for females indicates that the majority who drink do not have alcohol dependency problems but they are drinking at a harmful level, which is a risk factor for alcohol dependency and eating pathology. The majority of male drinkers however are drinking at a dependency level (Babor, et al., 2001; Stice, 2002).

Psychopathology

The majority of the sample did not report disordered eating according to Garner et al.'s. (1982) requirement for Anorexia, with 96.89% of males and 90.88% of females being below a score of 20 which is the cut off required for disordered eating on the EAT-26 (Garner et al., 1982). However females demonstrated more disordered eating symptoms than males. In terms of BN, the majority of the sample did not display bulimia symptoms with 98.78% of males and 99.39% of females being below a score of 104, which is the cut off score required for BN on the BULIT-R (Thelen, et al., 1991). Females demonstrated more bulimic symptoms than males by scoring higher on the BULIT-R. Taken together, these findings are consistent with the literature which states that females account for the majority of eating disorders (Fairburn et al., 2008). Depression is another area of psychopathology which was studied, with the majority of males and females not reporting depressive symptoms (Radloff, 1977); however females scored higher than males.

Self-Induced Vomiting after Drinking Alcohol

Of the participants that reported drinking, 48.58% reported self-induced vomiting after drinking alcohol. Significantly more males than females exhibited this behaviour, with 57.58% of males who reported they drink alcohol reporting self-induced vomiting after drinking compared to 42.26% of the females who drink. Of those who report self-induced vomiting after drinking alcohol, it would appear that for the majority of participants it is a relatively infrequent behaviour but there was one female outlier who reported having vomited twenty times over the previous twelve months.

Relationships with Psychopathology

Consistent with predictions, some interesting differences emerged between participants who reported self-induced vomiting after consuming alcohol and those that did not on measures of psychopathology. These will be discussed below.

Eating pathology. The findings suggest that there was a greater vomiting effect for females than for males, with females who self-induced vomiting after drinking alcohol reporting more eating pathology symptoms than males (on the EAT-26). The gender differences were greater for those that reported self-induced vomiting after drinking alcohol than for those who did not. More females than males reported self-induced vomiting after drinking alcohol because they wanted to get rid of the calories/food they had consumed thus these findings are important as they may indicate that self-induced vomiting after consuming alcohol for females is a potential behaviour pattern of an eating disorder or risk factor for an eating disorder. The finding that females who self-induce vomiting after drinking alcohol indicate greater levels of eating pathology than females who do not report this behaviour is consistent with findings from Blackmore and Gleaves (2006).

Bulimia. The findings suggest that the relationship between self-induced vomiting and bulimia symptoms (BULIT-R) was the same for males and females, which is different from what was found for eating pathology. More females than males indicated bulimia symptoms; in addition, individuals who report self-induced vomiting after drinking alcohol indicated more bulimia symptoms than those who do not report this behaviour. The gender difference in symptoms of bulimia was predicted due to the prevalence of BN being higher in females than males (Fairburn, Cooper, Shafran, & Wilson, 2008). The relationship between self-induced vomiting after drinking alcohol and bulimia is consistent with findings from Blackmore and Gleaves (2006).

Alcohol use: Hazardous level. The findings suggest that there was a greater vomiting effect for males than for females, with males who self-induced vomiting after drinking alcohol reporting more hazardous alcohol consumption than females (AUDIT). The gender differences were greater for those that reported self-induced vomiting after drinking alcohol than for those who did not.

Alcohol use: Dependency level. The findings suggest that the relationship between self-induced vomiting and alcohol dependency (MAST) was the same for males and females, which is different from what was found at the hazardous alcohol use level. More males than females indicated drinking alcohol at a dependency level, in addition, individuals who report self-induced vomiting after drinking alcohol indicated drinking at a dependency level compared to those who did not report this behaviour.

Summary of alcohol use. Males reported the motivation of self-induced vomiting after drinking alcohol was so they can carry on drinking, thus this finding on motivations for self-induced vomiting coupled with findings on alcohol use at a hazardous and dependency level are important because they indicate that for males, self-induced vomiting after drinking alcohol may be related to substance use disorders.

Depression. The findings suggest that there was a greater vomiting effect for females than for males, with females who self-induced vomiting after drinking alcohol reporting more depressed symptoms than males. The gender differences were greater for those that reported self-induced vomiting after drinking alcohol than for those who did not. The relationship between self-induced vomiting after drinking alcohol and depression is consistent with findings from Blackmore and Gleaves (2006).

Though not statistically significant, in analysing the graph it is apparent that males who report self-induced vomiting actually tended to endorse less symptoms of depression than males

who did not report this behaviour. This is interesting because the opposite is true for females: Females who report self-induced vomiting after drinking alcohol tended to score significantly higher on levels of depression than females who did not report this behaviour, and are thus more depressed. This has important implications for theories of depression because research demonstrates that females who are depressed tend to ruminate and males who are depressed tend to abuse substances and use externalising behaviours as coping mechanisms (Dobson et al., 2006).

Summary on relationships with psychopathology. Self-induced vomiting after drinking alcohol appears to have different functions for males and females. For females, self-induced vomiting may be a risk factor or behaviour of an ED, with this trend appearing stronger for AN than BN in the current findings, and for males, the behaviour may be a risk factor or behaviour of a substance use disorder. Self-induced vomiting after drinking appears to have different effects on levels of depression for males and females with females who report the behaviour endorsing more levels of depression than males, with the opposite true for males. This, taken together with the findings that males consume larger quantities of alcohol than females, and males who self-induce vomiting after drinking alcohol indicate more harmful drinking levels, may have important implications for behaviours/symptoms of depression in males.

In support of the link between substance use and self-induced vomiting for males, more males than females report their motivation for self-induced vomiting after drinking alcohol to be in order to keep on drinking. This has important implications for binge-drinking as males reported drinking larger quantities of alcohol than females, and above what is recommended by ALAC (Alcohol Advisory Council of New Zealand, 2006).

As outlined in the introduction, there is a high comorbidity between EDs and co-occurring disorders. Jordan et al's (2008) New Zealand study found that 27% of their sample with AN

demonstrated comorbid alcohol dependence, and that the bingeing/purging subtype of AN were more likely to have impulse control disorders and substance use disorders (SUDs). Thompson et al. (2007) also found this relationship with BN and substance use. The current study found that of the EDs, AN was the strongest predictor of self-induced vomiting after drinking alcohol, with problematic alcohol usage being the overall strongest predictor of this behaviour. Thus self-induced vomiting after drinking alcohol is predictive of eating pathology and problematic alcohol use.

Attitudes towards Self-Induced Vomiting after Drinking Alcohol

It is important to study people's attitudes towards behaviours as attitudes are a strong predictor of whether an individual will engage in any type of behaviour or not (Glasman & Albarracin, 2006). The findings suggest that, in terms of positive attitudes towards self-induced vomiting after drinking alcohol, there was a greater vomiting effect for males than for females, with males who self-induced vomiting after drinking alcohol scoring lower than females. The gender differences were greater for those that reported self-induced vomiting after drinking alcohol than for those who did not. This means that males who self-induced vomiting after drinking alcohol were more likely than females who did the same behaviour to endorse that self-induced vomiting after drinking is acceptable.

In terms of participants' attitudes towards a negative statement about self-induced vomiting after drinking alcohol, the findings suggest that there was a greater vomiting effect for males than for females, with males who self-induced vomiting after drinking alcohol scoring higher than females. The gender differences were greater for those that reported self-induced vomiting after drinking alcohol than for those that did not. This means that males who self-induced vomiting after

drinking alcohol were more likely to not endorse that self-induced vomiting an unacceptable behaviour, which is consistent with the previous finding.

In contrast to the above attitudinal findings, when examining participants' attitudes towards individuals who self-induce vomiting needing professional help, the findings suggest that the relationship between self-induced vomiting and this statement was the same for males and females, which is different from what was found for participants endorsing the behaviour as being ok or not ok. More males than females indicated that individuals who perform the behaviour do not need professional help. In addition, individuals who report self-induced vomiting after drinking alcohol themselves indicated that people who perform the behaviour do not need professional help, compared to those who do not report this behaviour.

Motivations for Self-Induced Vomiting after Drinking Alcohol

Some of these have been discussed further up but of particular interest here is that significantly more males than females reported they self-induced vomiting after drinking alcohol so they could carry on drinking. This implies that self-induced vomiting after drinking alcohol may be a risk factor or part of a syndrome of substance use disorders for males, specifically, for an alcohol use problem. We can not tell from the findings how the other endorsed motivations for self-induced vomiting after drinking alcohol are related to EDs or SUDs for males and females as there were no significant findings. For example, even though just over half of the individuals endorsed self-induced vomiting after drinking alcohol because they felt sick, we do not know what percent of those participants who endorsed this motivation actually performed the behaviour because they felt sick or if it was because of another reason. For example, individuals with EDs may endorse such a statement when they really have other reasons for vomiting. The motivation of

more females than males wanting to get rid of calories and food is of some concern as these motivations may be risk factors for disordered eating as well as being behaviours that individuals' with disordered eating self-report (Hay et al., 2004). The direction of the link between self-induced vomiting after drinking alcohol and risky eating behaviour is not known from this study however, it appears there is a relationship and this would be important for future research. For example, for females, is self-induced vomiting after drinking alcohol a risk factor for EDs, is having an ED a risk factor for self-induced vomiting after alcohol, is having an alcohol use disorder a risk factor for self-induced vomiting after drinking alcohol or do they simply share similar symptomatology? Also, research indicates a relationship between disordered eating and problematic alcohol use (Jordan et al., 2008; Thompson et al., 2007) therefore self-induced vomiting after drinking alcohol may play a role in this relationship given the findings that self-induced vomiting is related to both harmful alcohol usage and eating pathology.

What we can conclude, is that for males, self-induced vomiting after drinking alcohol is important to address in terms of alcohol problems. This statement is made from the findings that males who report the behaviour endorse the behaviour as acceptable and endorse that individuals who perform it do not need professional help, they consume more alcohol than females who report the behaviour, and their motivations towards the behaviour is to carry on drinking. This coupled with the binge-drinking culture of New Zealand makes self-induced vomiting after drinking alcohol an important behaviour to look at, especially with the male population.

Self-Induced Vomiting from Current Study with Previous Findings

Self-induced vomiting after drinking alcohol has not been studied intensely; however as mentioned in the introduction, there has been one anecdotal reporting of this behaviour and two

studies that the authors are aware of (Blackmore & Gleaves, 2006; Meilman et al., 1991). Meilman et al's., study was conducted on a female sample only with the findings reported being substantially lower than what was found in the Blackmore & Gleaves' (2006) study and current study. This difference may be accounted for by methodological differences, an increase in alcohol consumption over the last 14-16 years or cultural differences; as the Meilman et al. study also tested Greek affiliation with college students in sororities and fraternities living the United States. Blackmore and Gleaves (2006) found that approximately 59.8% of their female sample reported self-induced vomiting after drinking alcohol (which is slightly above the value for the current study) with this behaviour being positively correlated with a measure of BN symptomatology. Blackmore and Gleaves' study did not examine gender differences which was a limitation, with the current study examining this variable and finding that greater numbers of males than females reported self-induced vomiting after drinking alcohol. The reported frequency of self-induced vomiting after drinking alcohol in the current sample and Blackmore and Gleaves' (2006) findings, is consistent with research finding that 10-50% of adolescent girls have reported participating in occasional self-induced vomiting (Pope et al., 1984; Wtaker et al., 1992).

In the current study the finding that individuals did report self-induced vomiting after drinking alcohol, and that this behaviour is related to eating pathology is consistent with Blackmore and Gleaves' (2006) study. The current study has attempted to fill in the gaps on individual's motivations, alcohol use and situations in which they self induce vomiting under after consuming alcohol.

Limitations

There were a few limitations in the study, with the foremost being sample characteristics. The participants were all University students with a limited age range therefore there is no evidence of the generalizability of these results to different age groups or socioeconomic status (SES). The participants were also largely Caucasian further limiting generalizability to other ethnic or cultural groups. As mentioned in the introduction, the university population typically drinks larger quantities of alcohol than the general population (Ross & Iving, 1999) so the results may not be applicable to other populations. Also, the location of the study may impact the findings with New Zealand demonstrating one of the largest binge drinking cultures (ALAC, 2006).

Secondly, the first thirty-six participants were recruited via the participant pool (recruitment method one) through the university website which initially advertised the study as being about self-induced vomiting after drinking alcohol. It is unknown what, if any, impact this advertisement had on the types of participants who signed up for the study and those that did not due to the see-through advertising of the aims of the study. The advertisement was changed for the rest of the recruitment process to better conceal the purpose of the study.

Also, from investigating the frequency of drinking alcohol, there is an inconsistent finding between the numbers of participants who report not consuming any standard drinks in one week (10.10%) compared to those who do not report consuming any alcohol in one sitting (2.00%). This finding is either a contradiction or due to some participants' misinterpreting the questions in the Drinking Habits questionnaire.

Another possible limitation is that in order to measure participant's attitudes and motivations for engaging in self-induced vomiting, a range of difference options was set up for participants' to select as well as an "other" category. This method of measuring these variables was

used as it was thought by the authors that it was the simplest method for collecting attitudinal and motivational data; however, this method may have missed other motivations and reasoning's. This issue was addressed by including the "other" option.

Some of the questions may have been worded better in order to differentiate between different types of purging. For example, being able to differentiate between purging of food after drinking alcohol or purging of just alcohol would have made better sense of the findings. As it stands, the researchers are not able to make this distinction clear and can only make statements about individuals purging after drinking alcohol. In addition, treating the frequency data on attitudes as a continuous variable for some of the analyses may have limited the findings.

Summary and Implications

The current study focused on purging in relation to individuals consuming alcohol. Specifically, it assessed the frequency of self-induced vomiting after consuming alcohol (within a few hours of consumption) and individuals' attitudes and motivations behind engaging in the behaviour of self-induced vomiting after drinking alcohol; as well as gender differences on the behaviour, frequency, motivations, attitudes and psychopathology measures. The study found that nearly half of those participants who indicated they drank alcohol reported performing this behaviour with more males than females. The behaviour was related to measures of eating pathology, depression and alcohol use. Given the overlap between factors related to self-induced vomiting after drinking alcohol and general risk factors for EDs this behaviour may need to be considered as a risk for eating pathology, or a potential symptom of EDs for females. More importantly, we are able to conclude that for males, self-induced vomiting after drinking alcohol is related to substance abuse and may be a potential risk factor or symptom of an alcohol use

problem. This finding is consistent with what is often seen in other areas of behavioural research and has important implications in educating people about the health risks of self-induced vomiting and binge drinking. There is present concern for New Zealand's binge drinking culture with the current study adding more reason to believe this is of concern with both males and females drinking above what is recommended and males motivations to self-induce vomiting being so they can carry on drinking. Five females compared to one male reported engaging in self-induced vomiting after drinking alcohol in order to get rid of the food they had eaten which is of interest when looking at this behaviour as being a potential risk factor for eating pathology or a symptom of disordered eating. Taking these findings on self-induced vomiting after drinking alcohol, the study demonstrates that this behaviour is related to hazardous alcohol usage, especially for males as well as sharing common traits with EDs for females.

Future Directions

Future research on self-induced vomiting after drinking alcohol is needed in many areas. The Drinking Habits Questionnaire needs some critiquing with future research possibly including questions on whether someone had tried to self-induce vomit when they were drunk but could not actually vomit. The questionnaire could also include questions which relate to the epidemiology of BN and EDs in general to attempt to find out the mechanisms of self-induced vomiting after drinking alcohol and possible risk factors. It would be useful to design a scale, rather than just a survey, to quantitatively measure the behaviour in order to establish reliability and validity and compare that with risk factors and comorbid disorders of EDs and AUDs. Finally, it would also be useful to conduct a study on the general population, rather than just university students, to determine how prevalent self-induced vomiting after drinking alcohol is in the general population

as well as to gather information on the course of the behaviour to see how closely it relates to binge drinking, AUDs and EDs.

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Table 1.

Mean Gender Scores, t-tests and Effect Sizes on the Measures

Measure	Males (SD)	Females (SD)	<i>t</i> (df)	<i>p</i>	eta sqrd
EAT-26	3.07 (4.19)	7.49 (8.51)	4.71 (235)	<.001	.082
BULIT-R	41.58 (13.64)	51.77 (16.26)	5.19 (242)	<.001	.096
CES-D	9.09 (7.86)	14.40 (9.34)	4.74 (242)	<.001	.081
MAST	3.53 (2.58)	2.06 (1.98)	5.06 (237)	<.001	.093
AUDIT	13.16 (6.21)	8.42 (5.47)	6.42 (242)	<.001	.139

Table 2.

Frequency of male and female reported motivations for self induced vomiting (SIV) after consuming alcohol.

Gender	Avd.hang (N=22)	rid cal (N=5)	sick (N=67)	rid food (N=6)	carry on d. (N=20)
Male (N = 57)	4 (7.0%)	2 (3.5%)	32 (56.1%)	1 (1.8%)	18 (31.6%)
Female (N = 63)	18 (28.6%)	3 (4.8%)	35 (55.5%)	5 (7.9%)	2 (3.2%)
Total N = 120					

Avd.hang = “avoid hangover”; rid cal = “get rid of calories”; sick = “feel sick”; rid food = “get rid of food eaten”; carry on d. = “to carry on drinking”

Table 3.

Frequency of male and female reported situations that they self induced vomiting (SIV) after consuming alcohol.

Gender	out soc.	Alone	everytime	sick alc.	consum.	Other
Male						
(N = 57)	7 (12.3%)	0 (0%)	0 (0%)	29 (50.9%)	17 (29.8%)	4 (7.0%)
Female						
(N = 63)	10 (15.9%)	5 (7.9%)	1 (1.9%)	38 (60.3%)	5 (7.9%)	4 (6.4%)
Total N = 120						

out soc. = “out socialising”; alone = “alone”; everytime = “everytime drinking alcohol”; sick alc. = “when feel sick from alcohol consumed”; consum. = “when consumed too much alcohol”; other = “other”.

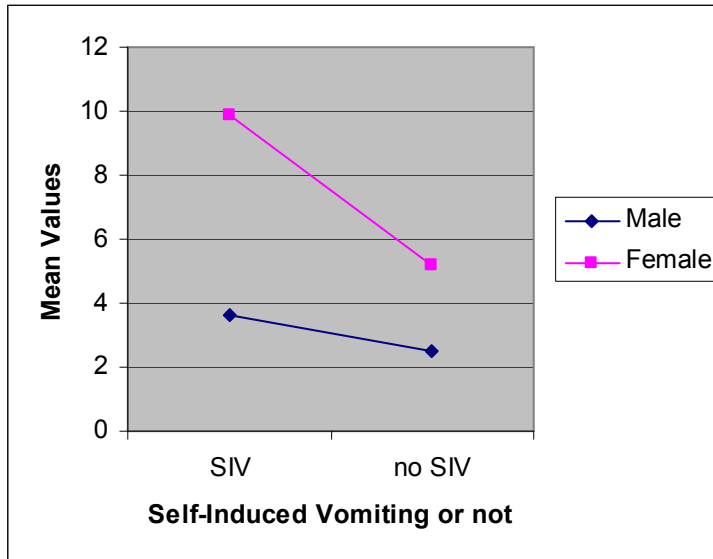


Figure 1. Interactions for gender and self-induced vomiting after drinking alcohol or not on the EAT-26.

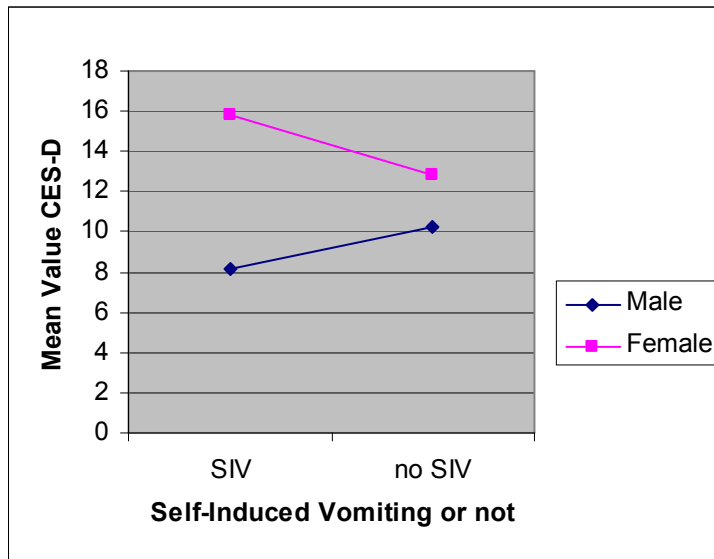


Figure 2. Interactions for gender and self-induced vomiting after drinking alcohol or not on the CES-D.

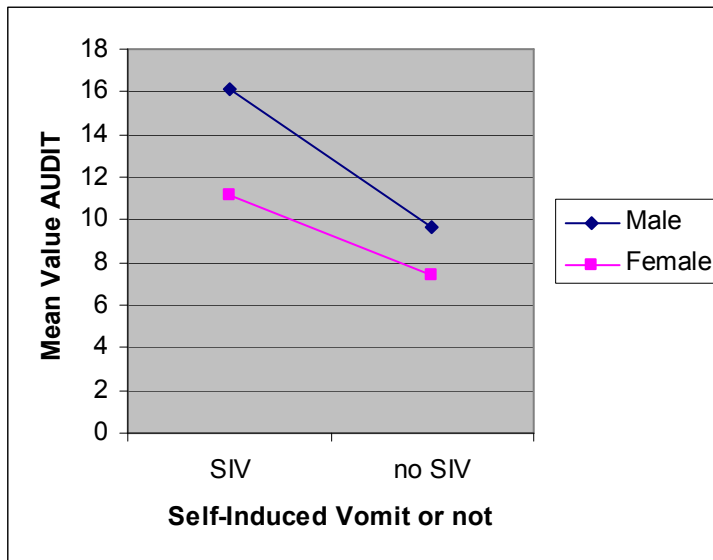


Figure 3. Interactions for gender and self-induced vomiting after drinking alcohol or not on the AUDIT.

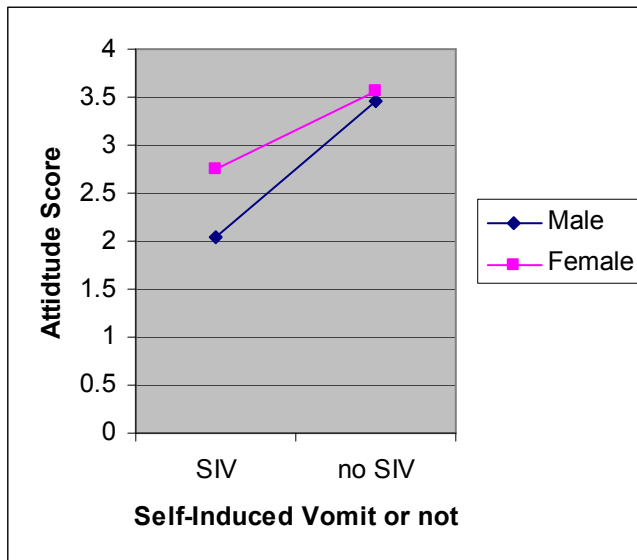


Figure 4. Interactions for gender and self-induced vomiting after drinking alcohol or not with the attitudes on “it is ok if someone intentionally vomits after alcohol”.

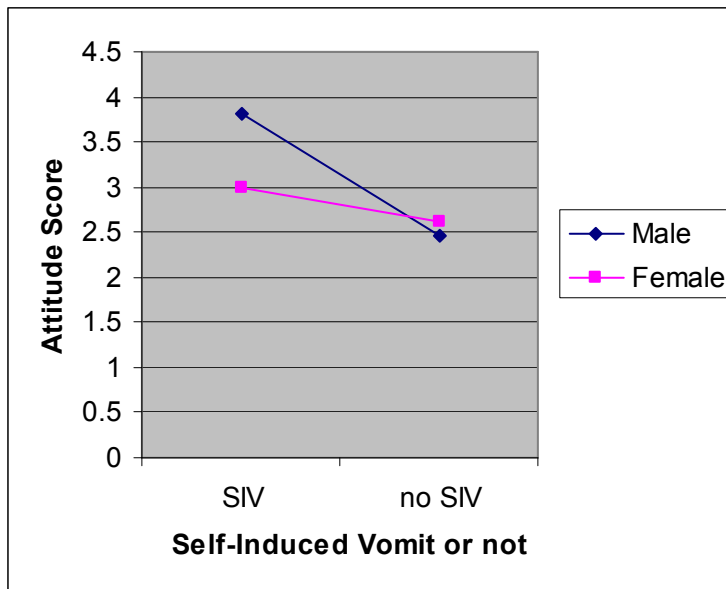


Figure 5. Interactions for gender and self-induced vomiting after drinking alcohol or not with the attitudes on “it is not ok if someone intentionally vomits after alcohol”.

APPENDIX A

INFORMATION SHEET

UNIVERSITY OF CANTERBURY

Participant information sheet for the study on Self Induced Vomiting After Drinking Alcohol

The Master Thesis that I am undertaking is part of a psychology postgraduate program at the University of Canterbury which involves investigating the possibility of purging by self induced vomiting when people are drinking alcohol. This research is designed to see how this behaviour occurs and peoples attitudes towards it in a community sample with no clinical diagnosis of an eating disorder.

The research will use six questionnaires: The Self Induced Vomiting after Drinking Alcohol Questionnaire, The BULIT-R, The EAT-26, The PAS, The MAST, and the AUDIT. The Self Induced Vomiting after Drinking Alcohol survey is a new survey that has just been developed for this research and it is designed to assess how often people engage in the behavior of self induced vomiting in the context of drinking alcohol; under what conditions this behavior occurs and peoples attitudes towards it. The BULIT-R (Thelen, Farmer, Wonderlich & Smith, 1991) is a revised version of the BULIT which was originally developed in 1984 by Smith and Thelen and has 28 items which are used to assess bulimia nervosa and bulimia nervosa like symptoms based on the DSM-R classification of this disordered eating. The EAT-26 developed by Garner, Olmsted, Bohr & Garfinkel in 1982 is used for assessing anorexic behaviors. The EAT-26 is a

psychometrically sound measure of disordered eating in general and anorexia nervosa that is less time consuming than some other measures and can also be used to assess eating behaviors with a non-clinical population of subjects. The Personality Assessment Screener was developed by Morey in 1997 and it is intended to be used as a quick screen for general emotional and behavioral problems. It assesses negative affect, acting out, health problems, psychotic features, hostile control, social withdrawal, suicidal thinking, alienation, alcohol problems and anger control. The AUDIT (Babor, Higgins-Biddle, Saunders, & Monterio, 2001) was developed to identify hazardous and harmful patterns of alcohol usage and the MAST was developed to assess whether individuals have a drinking problem.

Participants are expected to fill out all six questionnaires on their eating behaviors; attitudes and alcohol usage (in no particular order) in the researcher's office and participation will take 25-30 minutes. The overall results of the research may be published, but you may be assured of the complete anonymity of data gathered in this investigation. To ensure anonymity all questionnaire answers will be kept locked in the researchers office which will be locked at all times when she is not in her office. Only the principle researcher and supervisor would be able to use the data and no identifying characteristics will be presented on the final report. Individual questionnaires will be thrown out after five years and destroyed.

If the researchers find any participant in the range for a potential eating disorder or alcohol use disorder they will be contacted and given the opportunity to seek professional help. Suggested places would be the Health Centre at the University (ph: 364 2402, email:

healthcentre@canterbury.ac.nz) or the Psychology Centre, which is situated at the College of

Education (ph: 343 9627, email: psychclinic@canterbury.ac.nz). This would remain confidential between the researcher, supervisor and participant.

Participation in this research is voluntary and you may choose to withdraw from the study at any stage and no explanation is required.

The research is being carried out by Natalie Blackmore under the supervision of David Gleaves. Natalie can be contacted at npb25@student.canterbury.ac.nz or phone: 03 3382054, or internal direct: 7886, and David at david.gleaves@canterbury.ac.nz. They will be pleased to discuss any concerns you may have about participation in the study. The project has been reviewed and approved by the University of Canterbury Human Ethic Committee.

Thank you for your participation in this research.

APPENDIX B

QUESTIONNAIRES

The BULIT-R

Answer each question by circling the correct response on the questionnaire. Please respond to each item as honestly as possible; remember all of the information you provide will be kept strictly anonymous.

1. I am satisfied with my eating patterns.

1. agree
2. neutral
3. disagree a little
4. disagree
5. disagree strongly

2. Would you presently call yourself a binge eater?

1. yes, absolutely
2. yes
3. yes, probably
4. yes, possibly
5. no

3. Do you feel you have control over the amount of food you consume?

1. most or all of the time
2. a lot of the time
3. occasionally

4. rarely

5. never

4. I am satisfied with the shape and size of my body.

1. frequently or always

2. sometimes

3. occasionally

4. rarely

5. seldom or never

5. When I feel that my eating behavior is out of control, I try to take rather extreme measures to get back on course (strict dieting, fasting, laxatives, diuretics, self-induced vomiting or vigorous exercise).

1. always

2. almost always

3. frequently

4. sometimes

5. never or my eating behavior is never out of control

6. I use laxatives or suppositories to help control my weight.

1. once a day or more

2. 3-6 times a week

3. once or twice a week

4. 2-3 times a month

5. once a month or less (or never)

7. I am obsessed about the size and shape of my body.

1. always
2. almost always
3. frequently
4. sometimes
5. seldom or never

8. There are times when I rapidly eat a very large amount of food.

1. more than twice a week
2. twice a week
3. once a week
4. 2-3 times a month
5. once a month or less (or never)

9. How long have you been binge eating (eating uncontrollably to the point of stuffing yourself)?

1. not applicable; I don't binge eat
2. less than 3 months
3. 3 months-1 year
4. 1-3 years
5. 3 or more years

10. Most people I know would be amazed if they knew how much food I can consume at one sitting.

1. without a doubt
2. very probably
3. probably
4. possibly
5. no

11. I exercise in order to burn calories.

1. more than 2 hours per day
2. about 2 hours per day
3. more than 1 but less than 2 hours per day
4. one hour or less per day
5. I exercise but not to burn calories or I don't exercise

12. Compared with women your age, how preoccupied are you about your weight and body shape?

1. a great deal more than average
2. much more than average
3. more than average
4. a little more than average
5. average or less than average

13. I am afraid to eat anything for fear that I won't be able to stop.

1. always
2. almost always

3. frequently

4. sometimes

5. seldom or never

14. I feel tormented by the idea that I am fat or might gain weight.

1. always

2. almost always

3. frequently

4. sometimes

5. seldom or never

15. How often do you intentionally vomit after eating?

1. 2 or more times a week

2. once a week

3. 2-3 times a month

4. once a month

5. less than once a month or never

16. I eat a lot of food when I'm not even hungry.

1. very frequently

2. frequently

3. occasionally

4. sometimes

5. seldom or never

17. My eating patterns are different from the eating patterns of most people.
1. always
 2. almost always
 3. frequently
 4. sometimes
 5. seldom or never
18. After I binge eat I turn to one of several strict methods to try to keep from gaining weight (vigorous exercise, strict dieting, fasting, self-induced vomiting, laxatives, or diuretics).
1. never or I don't binge eat
 2. rarely
 3. occasionally
 4. a lot of the time
 5. most or all of the time
19. I have tried to lose weight by fasting or going on strict diets.
1. not in the past year
 2. once in the past year
 3. 2-3 times in the past year
 4. 4-5 times in the past year
 5. more than 5 times in the past year
20. I exercise vigorously and for long periods of time in order to burn calories.
1. average or less than average

2. a little more than average
 3. more than average
 4. much more than average
 5. a great deal more than average
21. When engaged in an eating binge, I tend to eat foods that are high in carbohydrates (sweets and starches).
1. always
 2. almost always
 3. frequently
 4. sometimes
 5. seldom, or I don't binge
22. Compared to most people, my ability to control my eating behavior seems to be:
1. greater than others' ability
 2. about the same
 3. less
 4. much less
 5. I have absolutely no control
23. I would presently label myself a 'compulsive eater', (one who engages in episodes of uncontrolled eating).
1. absolutely
 2. yes
 3. yes, probably
 4. yes, possibly
 5. no, probably not

24. I hate the way my body looks after I eat too much.

1. seldom or never
2. sometimes
3. frequently
4. almost always
5. always

25. When I am trying to keep from gaining weight, I feel that I have to resort to vigorous exercise, strict dieting, fasting, self-induced vomiting, laxatives, or diuretics.

1. never
2. rarely
3. occasionally
4. a lot of the time
5. most or all of the time

26. Do you believe it is easier for you to vomit than it is for most people?

1. yes, it's no problem at all for me
2. yes, it's easier
3. yes, it's a little easier
4. about the same
5. no, it's less easy

27. I use diuretics (water pills) to help control my weight.

1. never
2. seldom
3. sometimes
4. frequently
5. very frequently

28. I feel that food controls my life.

1. always
2. almost always
3. frequently
4. sometimes
5. seldom or never

29. I try to control my weight by eating little or no food for a day or longer.

1. never
2. seldom
3. sometimes
4. frequently
5. very frequently

30. When consuming a large quantity of food, at what rate of speed do you usually eat?

1. more rapidly than most people have ever eaten in their lives
2. a lot more rapidly than most people
3. a little more rapidly than most people
4. about the same rate as most people

5. more slowly than most people (or not applicable)

31. I use laxatives or suppositories to help control my weight.

1. never

2. seldom

3. sometimes

4. frequently

5. very frequently

32. Right after I binge eat I feel:

1. so fat and bloated I can't stand it

2. extremely fat

3. fat

4. a little fat

5. OK about how my body looks or I never binge eat

33. Compared to other people of my sex, my ability to always feel in control of how much I eat is:

1. about the same or greater

2. a little less

3. less

4. much less

5. a great deal less

34. In the last 3 months, on the average how often did you binge eat (eat uncontrollably to the point of stuffing yourself)?
1. once a month or less (or never)
 2. 2-3 times a month
 3. once a week
 4. twice a week
 5. more than twice a week

35. Most people I know would be surprised at how fat I look after I eat a lot of food.

1. yes, definitely
2. yes
3. yes probably
4. yes, possibly
5. no, probably not or I never eat a lot of food

36. I use diuretics (water pills) to help control my weight.

1. 3 times a week or more
2. once or twice a week
3. 2-3 times a month
4. once a month
5. never

Drinking Habits Questionnaire

- | | Female | Male |
|---|--------|------|
| 1. Gender (Please circle): | | |
| 2. How old are you? | | |
| 3. With what ethnicity do you affiliate? | | |
| 4. What is your body weight in kilograms? | | |
| 5. What is your height? | | |
| 6. How do you rate the way you look on a scale of 1 to 10 with 1 being "I really hate the way I look" to 10 being "I am very satisfied with the way I look" | | |

1	2	3	4	5	6	7	8	9	10
1	2	3	4	5	6	7	8	9	10

7. Do you drink alcohol? (Please circle yes or no)

Yes (currently) Yes (in the past) No (not ever)

Note: If your answer to Q7 was “No” then go to Q16

8. What age did you begin drinking alcohol?
9. How many standard drinks would you have in a usual week?
- | | |
|----------|-------------------------|
| a) 0 | b) 1 - 2 |
| c) 3 - 4 | d) 5 - 6 |
| e) 7 - 8 | f) 9+ (please indicate) |

10. How many standard drinks would you have in one sitting (for example on a Friday or Saturday night)?

- | | |
|----------|----------------------------------|
| a) 0 | b) 1 - 2 |
| c) 3 - 4 | d) 5 - 6 |
| e) 7 - 8 | f) 9+ (please indicate how many) |

11. Have you ever made yourself intentionally vomit whilst drinking alcohol or immediately after drinking alcohol (for example: within a couple of hours)?

Yes No

Note: If you answered "No" to Q11, go to Q16

12. How many times have you intentionally made yourself vomit after drinking alcohol in the last:

- | | | | | | | | | | | |
|---------------|---|---|---|---|---|---|---|---|---|----|
| a) 12 months? | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9+ |
| b) 6 months? | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9+ |
| c) 3 months? | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9+ |
| d) month? | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9+ |
| e) week? | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9+ |

(Please specify how many times if greater than 9)

13. What are your reasons for making yourself intentionally vomiting after drinking alcohol? *(please circle all of the responses that apply to you)*

- | | |
|-------------------------------|--|
| a) Avoid a hangover | b) To get rid of the calories from what I've been drinking |
| c) Feel sick | d) To get rid of the food I've eaten |
| e) So I can carry on drinking | f) Other (Please specify) |

14. In what situations are you most likely to intentionally make yourself vomit after drinking alcohol? *(please circle all of the responses that apply to you)*

- a) Out socialising with friends
- b) Alone
- c) Every time I drink
- d) When I think I'm going to be sick from the amount of alcohol I've consumed anyway
- e) Only when I've consumed more alcohol than I usually would
- f) Other (please specify all other situations here)

15. Do your friends know that you have intentionally vomited after drinking alcohol?

Yes Maybe Not Sure No

16. It is ok if someone intentionally vomits after drinking alcohol.

Strongly agree agree neutral disagree strongly disagree

17. It is not ok if people intentionally make themselves vomit after drinking alcohol so they can carry on partying and drinking

Strongly agree agree neutral disagree strongly disagree

18. People who intentionally make themselves vomit after drinking alcohol need professional help

Strongly agree agree neutral disagree strongly disagree

19. I have intentionally vomited in the past because I am bloated from eating

Never occasionally sometimes often frequently

Note: Participants who answered "No" to Q7 can finish here (skip Q20 & 21)

20. I eat more food when I drink alcohol than I usually do

Never occasionally sometimes often frequently

21. I eat less food when I am drinking alcohol than I would normally do

Never occasionally sometimes often frequently

EAT-26

Choose one response for each of the questions. Circle your response from “Always” to “Never”.

1. Am terrified about being overweight.					
Always	Usually	Often	Sometimes	Rarely	Never
2. Avoid eating when I am hungry.					
Always	Usually	Often	Sometimes	Rarely	Never
3. Find myself preoccupied with food.					
Always	Usually	Often	Sometimes	Rarely	Never
4. Have gone on eating binges where I feel that I may not be able to stop.					
Always	Usually	Often	Sometimes	Rarely	Never
5. Cut my food into small pieces.					
Always	Usually	Often	Sometimes	Rarely	Never
6. Aware of the calorie content of foods that I eat.					
Always	Usually	Often	Sometimes	Rarely	Never
7. Particularly avoid food with a high carbohydrate content (i.e. bread, rice, potatoes, etc.)					
Always	Usually	Often	Sometimes	Rarely	Never
8. Feel that others would prefer if I ate more.					
Always	Usually	Often	Sometimes	Rarely	Never
9. Vomit after I have eaten.					
Always	Usually	Often	Sometimes	Rarely	Never
10. Feel extremely guilty after eating.					
Always	Usually	Often	Sometimes	Rarely	Never
11. Am preoccupied with a desire to be thinner.					
Always	Usually	Often	Sometimes	Rarely	Never
12. Think about burning up calories when I exercise.					
Always	Usually	Often	Sometimes	Rarely	Never
13. Other people think that I am too thin.					

Always	Usually	Often	Sometimes	Rarely	Never
14. Am preoccupied with the thought of having fat on my body.					
Always	Usually	Often	Sometimes	Rarely	Never
15. Take longer than others to eat my meals.					
Always	Usually	Often	Sometimes	Rarely	Never
16. Avoid foods with sugar in them.					
Always	Usually	Often	Sometimes	Rarely	Never
17. Eat diet foods.					
Always	Usually	Often	Sometimes	Rarely	Never
18. Feel that food controls my life.					
Always	Usually	Often	Sometimes	Rarely	Never
19. Display self-control around food.					
Always	Usually	Often	Sometimes	Rarely	Never
20. Feel that others pressure me to eat.					
Always	Usually	Often	Sometimes	Rarely	Never
21. Give too much time and thought to food.					
Always	Usually	Often	Sometimes	Rarely	Never
22. Feel uncomfortable after eating sweets.					
Always	Usually	Often	Sometimes	Rarely	Never
23. Engage in dieting behavior.					
Always	Usually	Often	Sometimes	Rarely	Never
24. Like my stomach to be empty.					
Always	Usually	Often	Sometimes	Rarely	Never
25. Enjoy trying new rich foods.					
Always	Usually	Often	Sometimes	Rarely	Never
26. Have the impulse to vomit after meals.					
Always	Usually	Often	Sometimes	Rarely	Never



14557 FRIAR STREET, SUITE 107
VAN NUYS, CA 91411
818/997-0414
FAX 818/997-0851
NCADD-SFY@att.net
www.ncadd-sfv.org

Michigan Alcohol Screening Test

The MAST Test is a simple, self scoring test that helps assess if you have a drinking problem. Please circle the answers to the following YES or NO questions:

1. Do you feel you are a normal drinker? ("normal" - drink as much or less than most other people)

Circle Answer: YES NO

2. Have you ever awakened the morning after some drinking the night before and found that you could not remember a part of the evening?

Circle Answer: YES NO

3. Does any near relative or close friend ever worry or complain about your drinking?

Circle Answer: YES NO

4. Can you stop drinking without difficulty after one or two drinks?

Circle Answer: YES NO

5. Do you ever feel guilty about your drinking?

Circle Answer: YES NO

6. Have you ever attended a meeting of Alcoholics Anonymous (AA)?

Circle Answer: YES NO

7. Have you ever gotten into physical fights when drinking?

Circle Answer: YES NO

8. Has drinking ever created problems between you and a near relative or close friend?

Circle Answer: YES NO

9. Has any family member or close friend gone to anyone for help about your drinking?

Circle Answer: YES NO

10. Have you ever lost friends because of your drinking?

Circle Answer: YES NO

11. Have you ever gotten into trouble at work because of drinking?

Circle Answer: YES NO

12. Have you ever lost a job because of drinking?

Circle Answer: YES NO

ADMINISTRATIVE OFFICE
14557 Friar St.
Van Nuys, CA 91411
(818) 997-0414

SANTA CLARITA VALLEY
20555 Soledad Cyn Rd., #16
Canyon Country, CA 91351
(861) 299-2686

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OF THE SAN FERNANDO VALLEY, INC.

14557 FRIAR STREET, SUITE 107
VAN NUYS, CA 91411
818/997-0414
FAX 818/997-0851
NCADD-SFV@att.net
www.ncadd-sfv.org

13. Have you ever neglected your obligations, your family, or your work for two or more days in a row because you were drinking?

Circle Answer: YES NO

14. Do you drink before noon fairly often?

Circle Answer: YES NO

15. Have you ever been told you have liver trouble such as cirrhosis?

Circle Answer: YES NO

16. After heavy drinking have you ever had delirium tremens (D.T.'s), severe shaking, visual or auditory (hearing) hallucinations?

Circle Answer: YES NO

17. Have you ever gone to anyone for help about your drinking?

Circle Answer: YES NO

18. Have you ever been hospitalized because of drinking?

Circle Answer: YES NO

19. Has your drinking ever resulted in your being hospitalized in a psychiatric ward?

Circle Answer: YES NO

20. Have you ever gone to any doctor, social worker, clergyman or mental health clinic for help with any emotional problem in which drinking was part of the problem?

Circle Answer: YES NO

21. Have you been arrested more than once for driving under the influence of alcohol?

Circle Answer: YES NO

22. Have you ever been arrested, even for a few hours because of other behavior while drinking?

(If Yes, how many times _____)

Circle Answer: YES NO

ADMINISTRATIVE OFFICE

14557 Friar St.
Van Nuys, CA 91411
(818) 997-0414

SANTA CLARITA VALLEY

20555 Soledad Cyn Rd., #16
Canyon Country, CA 91351
(861) 299-2888

PARTIALLY FUNDED BY THE L.A. COUNTY ALCOHOL AND DRUG PROGRAM ADMINISTRATION

Center for Epidemiologic Studies Depression Scale (CES-D), NIMH

Below is a list of the ways you might have felt or behaved. Please tell me how often you have felt this way during the past week.

	During the Past			
Week				
	Rarely or none of the time (less than 1 day)	Some or a little of the time (1-2 days)	Occasionally or a moderate amount of time (3-4 days)	Most or all of the time (5-7 days)
1. I was bothered by things that usually don't bother me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. I did not feel like eating; my appetite was poor.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. I felt that I could not shake off the blues even with help from my family or friends.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. I felt I was just as good as other people.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. I had trouble keeping my mind on what I was doing.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. I felt depressed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. I felt that everything I did was an effort.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. I felt hopeful about the future.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. I thought my life had been a failure.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. I felt fearful.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. My sleep was restless.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. I was happy.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. I talked less than usual.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. I felt lonely.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. People were unfriendly.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. I enjoyed life.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. I had crying spells.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. I felt sad.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. I felt that people dislike me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. I could not get "going."	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SCORING: zero for answers in the first column, 1 for answers in the second column, 2 for answers in the third column, 3 for answers in the fourth column. The scoring of positive items is reversed. Possible range of scores is zero to 60, with the higher scores indicating the presence of more symptomatology.

APPENDIX C

DEBRIEF SHEET

UNIVERSITY OF CANTERBURY

Participation debriefing sheet for the study of Self Induced Vomiting after Drinking Alcohol

The research that you have just been a part of is part of a psychology postgraduate program at the University of Canterbury which involves the investigating the possibility of purging by self induced vomiting in an alcohol context (for example when people have been drinking alcohol). This research is for a Masters Thesis and is designed to see how this behavior occurs and peoples attitudes towards it in a community sample with no clinical diagnosis of an eating disorder.

The proposed research on self-induced vomiting and drinking, coined in the popular media as “social bulimia” refers to a behaviour pattern that could be a warning sign for other eating problems or may be a health risk in and of itself. There has been limited research conducted on this subject matter to the best of the researcher’s knowledge, however, a brief study by Meilman, von Hippel and Gaylor (1991) found that 7.4% of

their female sample purged after drinking alcohol only, and an additional 7.4% purged after both drinking alcohol and eating. The pilot study to the proposed current study by Blackmore (2006) supported this finding, however, their results indicated that a larger amount of females in their sample engaged in the purging behaviour; specifically that 59.4% of their sample who drank alcohol had engaged in this behaviour. Based on the limited research on this behaviour the proposed study is to expand the researcher's pilot study by assessing both female and male behaviours and motivations for self-induced vomiting after drinking alcohol, and how the behaviour relates to other eating behaviours, depression and alcohol abuse.

The purpose of this study is to assess how often males and females engage in this behavior of purging in the context of drinking alcohol (but not in the same clinical terms of bulimia nervosa); and under what conditions this behavior occurs by designing and administering a comprehensive survey. The specific areas to be looked at are:

- To assess male and female attitudes towards self-induced vomiting after drinking alcohol from a representative sample of university students.
- To better determine how self-induced vomiting after drinking alcohol is related to disordered eating. For example people who intentionally make themselves vomit after drinking alcohol should score higher on the bulimia nervosa test (BULIT-R) than people who do not make themselves intentionally vomit after consuming alcohol (as demonstrated in the preliminary study).
- To determine the degree to which self-induced vomiting after drinking alcohol is related to depression by including a standardized depression measure

- To determine the degree to which self-induced vomiting after alcohol is related to substance abuse by including a standardized substance abuse measure
- To provide a greater understanding of the behavior for furthering the study of self-induced vomiting in the context of drinking alcohol.

These will be assessed using a structure similar to the pilot study in 2006. Two hundred males and 200 females are being recruited via the University of Canterbury between the ages of 18 and 30. These participants are then required to fill out 6 questionnaires (EAT-26, BULIT-R, AUDIT, MAST, CES-D, and the self induced vomiting after drinking alcohol questionnaire) which are self rated and the majority on a likert scale. These responses are then analysed with SPSS which is a statistics program. Variables that have single categorical independent variables (IV) and categorical dependent variables (DV) will be analysed using t-tests or oneway ANOVAs, and variables which have multiple IVs and categorical DVs will be measured using factorial ANOVAs. Data which have continuous IVs and continuous DVs will be analysed using multiple regression techniques. The relationship between the various assessment measures (BULIT-R, EAT-26, BMI, CES-D, Self-induced Vomiting Survey, MAST, and the AUDIT) will be examined using Pearson correlations.

It is important to help identify at risk behaviours for further eating pathology and drinking behaviours. From the pilot study it was found that the majority of people who drink alcohol have intentionally made themselves vomit after drinking therefore this behaviour has important implications clinically. Investigating individual's attitudes and

motivations towards this behaviour is also very important as tentatively it seems sociably acceptable by those who do engage in this behaviour.

If you feel that you would like to talk to someone about any issues or concerns about participating in this study that may have raised, you can contact the Health Centre at the University on 364 2402 or email at healthcentre@canterbury.ac.nz; or you could contact the Psychology Centre which is situated at the College of Education on 343 9627, or email at psychclinic@canterbury.ac.nz. If you have any questions regarding this research directly feel free to contact myself (Natalie Blackmore) or the Head Supervisor (David Gleaves) on the emails provided on the information sheet.

Thank you for your participation in this study

Natalie Blackmore

